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# Hierarchical Clustering of the European Countries from the Perspective of E-government, E-participation, and Human Development

*Armenia Androniceanu*[1], *Irina Georgescu*[2]

**Abstract:**

The information society offers governments the opportunity to work closer with citizens and companies, to respond better to their requirements, and to create the conditions for the functioning of a modern, efficient, and democratic public administration. Due to the development of the information society, e-governance and e-participation appeared and developed, through which the communication of governments with stakeholders became more straightforward and less expensive. This research aims to identify and analyse comparatively how the telecommunications infrastructure and Internet users influenced the expansion and diversification of e-government and e-participation that contributed to the human development index in the EU states in 2010-2022. In the longitudinal data analysis, we apply fixed and random estimators to see the most critical determinants of the human development index. In the second part, we cluster the 27 EU countries in four clusters by Ward's hierarchical algorithm. The hierarchical clustering emphasised that there is still a digital divide among EU countries. The digital divide occurs because of the lack of Internet access of the population from marginalised communities of European countries, resulting in socio-economic disparities. Therefore, some EU states should have initiatives to bridge the gap to digital technologies. The research results are essential for

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those governments coordinating the policies and the entire process of integrating information technologies and dedicated e-government and e-participation applications in central and local administration.

**Keywords:**
e-government, e-participation, human development, Internet use

## 1. Introduction

The communications infrastructure and the continuous improvement of the capacity of administrations and citizens of European states to cooperate in the governance process and access public services of general interest have significantly changed the content and tools used in the e-government and e-participation processes and have significantly contributed to human development in Europe (Androniceanu, 2023; Al-Mannaei et al., 2023). The use of the Internet by public authorities confers the classic advantages of availability, accessibility and interaction for citizens and private companies. Therefore, the development of the communications infrastructure and the increase in access to the Internet ensures the development of e-government and e-participation and can significantly influence the quality of public services and communication with public administration stakeholders (Burger et al., 2020). As a result of these changes in the communication infrastructure and the accessibility of the Internet, most of the problems generated by the traditional bureaucracy began to be solved progressively in most states. In this context, various integrated application systems have been developed (Gancarczyk et al., 2022). They confirm the advantages of integrating information technologies in applications necessary for activities and processes, the decision-making process, and the development of policies of social and economic interest in a country. In the last three decades, most researchers have recommended replacing expensive bureaucratic procedures in terms of time and cost with accessible and efficient IT applications in the public sector. As a result, state governments have developed investment programmes both in communications infrastructure and increasing citizens' access to the Internet and their education. These efforts generated satisfaction for the administration and public institutions' stakeholders because they became partners in the process of digital transformation (Rodríguez-Martínez et al., 2023). The broader use of the Internet has made possible the development of another concept called electronic democracy (Martins & Veiga, 2022). Thus, citizens can communicate actively and without intermediaries with state institutions. In addition, it is possible to maintain a personalised relationship with the administrative institutions, all these benefits having the advantage of being obtained at low costs, high quality, and better productivity (Bouckaert & Van de Walle, 2001; Colesca & Dobrica, 2008; Eynon, 2007). The research question the paper answers is: How did e-government and e-participation based on IT infrastructure influence human development in the EU states from 2010-2022?

The paper is organised as follows. Section 2 contains a comprehensive literature review on recent approaches regarding e-government, e-participation, and human development. Section 3 contains the research frame, data description, including data sources, and descriptive statistics. Section 4 briefly presents the methodology of fixed and random effects estimators and Ward's hierarchical algorithm. Section 5 presents the main results, followed by discussions and interpretations. The paper ends with some conclusions.

## 2. Literature review

E-government dates back a few decades to the 1970s when governments started to use computers for data processing and record keeping (Zautashvili, 2017; Phimolsathien, 2022; Potter, 1998). In the 1990s, with the advent of the Internet, governments built their own official websites, increasing transparency. In the 2000s, citizens began interacting with governments electronically through online services. The enterprise architecture framework was extensively developed in the first decade of the 2000s, facilitating online communication and open access to public databases (Idzi & Gomes, 2022). Social media platforms allow citizens to communicate with government agencies.

E-governance represents the process of reinventing the public sector. It refers to providing public services in electronic format for citizens, civil servants, and the business environment. Three large classes of participants are involved in the governance process: citizens, administrations and companies (Gulati et al., 2014). Specific communication and transactional relationships are born between these participants, divided into several large groups of electronic government components (Colesca, 2009). Thus, over time, e-government and e-participation have become effective instruments for diversified cooperation based on smart communication between the main actors: government, citizens, and private organisations. E-government represents more than a bi-directional connection with public administration stakeholders (Gatautis, 2008). Implementing e-government means from top to bottom (from the state to the citizen). According to the literature (Martins & Veiga, 2022; Kézai & Páthy, 2023), a complete e-government solution can meet the following requirements:

(i) A single point of contact for providing electronic services 24 hours a day, seven days a week;
(ii) a bridge to the digital society;
(iii) reconstruction of the citizen's trust in the government (objective related to the variable promotion within the marketing mix, more precisely public relations);
(iv) acceleration of economic growth, and the like.

As Tomkova (2009) explained, e-government uses information and

communication technologies in the following areas: (1) improvement of processes: electronic administration (cost reduction, performance management, establishment of strategic connections in the administration, distribution of authority): (2) connecting citizens: e-Citizens and e-Services (informing citizens, identifying their needs, improving public services). This connection begins with the publication of information and continues through interaction (receiving and displaying information from citizens), ending in the transaction phase; (3) interactions with the outside: e-society (Pucheanu et al., 2022). In the United Kingdom, the Government Gateway System provides approximately 3,000 e-government and e-administration services (Kemeç, 2022). According to Dryzek (2000) there are the following four main components of e-government: G2C, which reflects the relationships between government and citizens; G2B, which integrates the links between government and business environment; G2E, which refers to the relationships between government and civil servants and G2G, government and other governmental institutions. The first e-government (G2C) component covers government-citizen relations achieved through new technologies. It is one of the most debated areas of government initiatives in all countries that have e-government development programmes. These types of communications demand further ICT penetration even in developed countries (Kersan-Škabić & Vukašina, 2023).

In essence, the services in this category mean bringing the government online closer to the citizens. First, the aim is to bring some simple information online; then, the citizen-government relationship becomes interactive, with communication and data exchanges in both directions. Finally, relationships become transactional, meaning that some services provided by the government to citizens can be provided online - on the websites of the respective public institutions or on global government portals - the so-called "one-stop shop" portals (Wauters & Lörincz, 2008). In most developed countries, all these services, due to their diversity, are grouped on a single website, from where a connection is made to the institutions' websites that can solve the respective request. The problem is solved on the portal site, without the beneficiary even knowing which institutions they turned to and on which databases they communicated with each other to receive their answer. Another example of success is in Singapore, where an "eCitizen Centre" provides services to citizens through the Internet developed by the Singapore government. Citizens can interact with the state online in a wide variety of situations. For example, they can buy a house, rent an apartment, sue, file a complaint, pay a tax or fee, enrol their child in school, register for military service, and the like.

The same types of government services are offered online in the United States and on the portal, www.firstgov.gov, with a centre called the e-citizen page (Martins & Veiga, 2022).

Local administrations conduct most public services that integrate e-government applications. For example, electronic services are provided as Infoville in Valencia (Spain) or NaestvedNet in Naestved (Denmark). In general, the services offered are the same. However, the portal's personalisation level is different, and the information circulated is much more specific in one administration than the other (Lombardi et al.,

2012). The Government of Valencia, working with Oracle, the world leader in database applications, built Infoville not only as a government website but as a portal that combines a wide variety of services from the public and private sectors. Infoville is an application that provides local information and integrates e-commerce, e-government, online education, and virtual government. In Naestved, there is a higher level of personalisation, in access to both data and public services.

The second component of e-government is G2B, referring to the government's relationship with companies. Considering that companies represent the engine of a country's economic growth, the services provided by the state on the Internet in favour of this sector should be commensurate with its importance. Currently, in most states, government purchases and auctions are increasingly online, meaning more transparency and lower costs. The first public procurement system was launched in Singapore by the IT department of the Ministry of National Defence. Since then, it has become evident how these new techniques can make the public procurement process more efficient by reducing the number of frauds, more efficient management systems for offers on electronic support, more accessible access to corporate suppliers worldwide, time saved by processing offers online and the development of databases rich in helpful information (Ringold et al., 2011). The Australian state government of Victoria worked with Oracle to improve the efficiency of the Department of Natural Resources and Environmental Protection and achieved a 70% improvement. Supporting digital environment development positively affects digital transformation in business processes (Jurczuk & Florea, 2022; Straková et al., 2022).

The third component of e-government (G2E) involves the use by the civil servants of an electronic means in communication and transactions through applications that facilitate the fulfilment of some public service responsibilities, such as, for example, the use of special databases by municipality employees for decisions in the real estate area, thereby reducing possible time losses generated by physical travel to another department and searching in physical archives. Thus, the limitations of space, the crowding of people looking for various information, and those of time are eliminated. Of course, these professional duties require an appropriate level of civil servants' digital skills which can be tested using the relevant tools (Bilan et al., 2023). The third component of e-government is about the interaction between government institutions (G2G) and communication between them by electronic means. This communication between public institutions occurs since solving some problems is achieved through complex solutions, which require data processing held by different institutions. For example, a beneficiary perceives the registration of a company as a single objective, when, in reality, it involves multiple steps: at the Trade Registry, the Court, the Financial Administration, and the like. G2G applications must integrate processes, including solutions accepted by all participants. However, for process integration to be possible, the integration of the technical infrastructure is also necessary. Not only must databases communicate with each other, but also the machines that support them - computers, web servers, and local networks must respect a certain level of standardisation. G2G,

therefore, means communication between several different public institutions to solve a unique citizen problem. Most of the time, this communication is undetectable by the citizen and involves the exchange of data at different levels of security between the computer systems of the two institutions. The big problem that appears in developed countries in implementing G2G solutions is the limited capacity of the public administration's human resources to cooperate with each other to optimise the operational time and reduce bureaucracy. The vertical organisation of public institutions often means that solving some problems requires collaboration between departments. Implementing G2G would solve a large part of these problems and lead to the limitation of bureaucracy. However, this depends on the interest that exists at the departmental level in implementing such inter-institutional bridges (Carter & Bélanger, 2005).

More recently, new concepts such as Industry 4.0, artificial intelligence, blockchain, and the Internet of Things appeared, and the term "smart government" was introduced (Zhang & Kimathi, 2022; Lăzăroiu et al., 2022; Kubíčková et al., 2021). Emerging technologies improved governance quality and citizens' services.

According to specialised literature (Matei & Dogaru, 2010), there is a direct connection between e-participation and e-government. Although since 2004, e-participation has been explained as a tool through which citizens can participate in decision-making in the governance process or in consultations in which they can express opinions, later on, other perspectives of approaching this concept appeared (Pollitt, 2001). Thus, in the literature, there is no unified point of view regarding what e-participation means. Some of the most important and relevant opinions are presented below. Most academics and practitioners (Macintosh et al., 2009; Sæbø et al., 2008; Medaglia, 2012; Welch, 2012; United Nations, 2014; Ntshangase & Msosa, 2022). Other academics and practitioners (Alderete, 2022; Sá et al., 2016). explained e-participation as a dynamic IT platform initiated by governments to involve citizens in different activities and services. Other specialists explained e-participation as a social activity that brings together citizens, state administrations and politicians (Sanford & Rose, 2007; Smith et al., 2011; Shava & Vyas-Doorgapersad, 2023). As it results from most of the definitions expressed in the literature, politicians are the main stakeholders who can initiate different social participation activities, analyse their content and consider it or not. Therefore, e-participation does not necessarily refer to civic actions or the involvement of citizens in consultations with the government but only to those activities initiated by governments using information technologies to achieve some public policy objectives or even to initiate public policies by selecting topics from the citizens' agenda. From this perspective, specialists (Barro, 1991; Barro, 2001; Anarfo et al., 2019; Okunola & Fakunle, 2021) consider that e-participation has become somewhat of a tool of e-government. In the last decade, e-participation has been used by governments as an instrument of e-government (United Nations, 2018a; United Nations, 2018b; United Nations, 2019).

The third essential variable integrated into our research is human development in

2010-2022, reflected by the Human Development Index (HDI). The United Nations has proposed HDI to assess each country's individual human development level.

According to the literature (Mishchuk et al., 2023; Morvai et al., 2022; Ferraz et al., 2020; Meyer & Meyer, 2020; Datta & Singh, 2019; Sen, 1997), HDI is a composite index of health, education, and income, more holistic than GDP, and has a more significant implication for digital transformation. HDI measures the well-being of individuals, while GDP refers to economic output. HDI refers to life quality connected to digitalisation in that digital technologies lead to social progress (Simionescu et al., 2021). Thirdly, HDI is an efficient instrument for policy-makers beyond economic growth. The impact of informational technologies and communications on the three components of HDI can, in turn, be assessed.

This paper is a continuation of the studies developed by the authors during 2021-2023 (Androniceanu & Georgescu, 2021; Androniceanu et al., 2022a; Androniceanu et al., 2022b; Androniceanu & Georgescu, 2023) where the significant impact of digitalisation on government effectiveness and well-being has been emphasised for EU countries, applying data mining techniques such as Principal Component Analysis and cluster analysis. The results showed that the Nordic countries are top, followed by West European countries and emerging economies in the last positions (Małkowska et al., 2021). Zambrano- Yépez et al. (2023) study the determinants of e-government expressed as EGDI: population, Internet use, GDP per capita, and the global innovation index (GII). More populated countries with a higher GDP have a higher EGDI. Lee et al. (2021) test a model of democratic e-governance called DEWEM. The model agreed with citizens' satisfaction and their willingness to use the platform. The digital divide refers to disparities in using digital technologies based on education, income, and other socioeconomic characteristics (Kézai & Páthy, 2023). The digital divide may have a socioeconomic impact (Sun et al., 2022a; Sun et al., 2022b; Oláh et al., 2021). People lacking access to digital technologies are hindered from education, healthcare, and job offers, creating social disparities (Doran et al., 2023; Marino et al., 2022; Bartczak, 2022; Marino & Pariso, 2021). Dobrolyubova (2021) overviews the literature on measuring government digitalisation. Implementing digital technologies should contribute to more effective public administration, communication and knowledge sharing (Zsigmond & Mura, 2023; Škare et al., 2023; Głodowska et al., 2023). Dobrolyubova et al. (2019) discuss the impact of digital transformation on government performance. Even if the impact is positive, as Durkiewicz and Janowski (2018) remarked, the ultimate influence is corruption reduction and environmental degradation (Androniceanu et al., 2022a; Krishnan et al., 2013). Waheduzzaman and Khandaker (2022) analysed a panel of 136 world countries, and by panel least squares regression finds a significant positive role of e-participation in government effectiveness and control of corruption. Abdulkareem et al. (2022) investigate the interposing influence of e-government trust on the association between e-participation and e-government quality using PLS-ESM. The findings indicate that the quality of e-government does not correlate directly with e-participation. Trust in e-government plays a comprehensive mediating role in this

relationship. This outcome underscores the significance of transparency in the public sector, as this enhances citizens' confidence in the system. The study by Mellouli et al. (2020) focuses on the viewpoint of government personnel. The investigation delves into two dimensions of e-government public value: organisational performance and environmental quality. These dimensions are studied concerning three quality factors, together with the intentions to use and the satisfaction of users. Dhaoui (2021) delves into the impact of e-government on different dimensions of economic and social progress for a panel of 15 MENA countries spanning 2003-2018. The findings highlight that most indicators of good governance contribute positively to sustainable development. Digitalisation enhances control over corruption and government effectiveness. Ma and Zheng (2019) discuss an extensive survey of more than 28,000 participants from 32 European countries. The results indicate that e-government services that are ranked highly are met with positive reception from citizens, suggesting a specific alignment between the supply and demand of e-government. In the HDI ranking, from 2020, Norway finished first with an HDI value of 0.957, Ireland and Switzerland came second, while the United States ranked 17th with an HDI of 0.926. Our research identified and analysed the correlations between the three key variables, namely e-government, e-participation and human development in the EU countries from 2010-2022.

As can be seen, most of the papers identified in the specialised literature show a separate approach to the concepts we analysed, namely e-governance, e-participation, Internet use, ICT infrastructure, and human development. Our approach differs from the fact that the analysis of the variables is correlative for the entire analysed period. Within this, we identify changes and analyse correlations between various variables and measure their intensity. These changes and their impact on human development were analysed, and a hierarchical clustering was conducted. The originality of this research consists in the use of an integrated methodology, including hierarchical clustering, to demonstrate the changes in the EU countries from 2010-2022 and to rank the EU countries grouped in clusters according to citizens' accessibility to the Internet and digital infrastructure, e-governance, e-participation, and human development index.

The following section contains the purpose of the research, specific objectives, and research hypotheses, the research variables, and the statistical and econometric methods used to make correlations, analyse them and interpret the results.

## 3. The frame of the research and data description

The purpose of the research is closely correlated with the specific objectives and the research variables selected from different international databases.

This research aims to identify and analyse comparatively how the telecommunications infrastructure and Internet users influenced the expansion and

diversification of e-government and e-participation that contributed to the human development index in EU countries from 2010-2022.

The specific research objectives are:

(1) to discover the intensity of the correlations in EU countries between human development, on the one hand, and telecommunications infrastructure and the degree of Internet use, on the other hand;

(2) to know the type of correlations and its intensities between e-government, e-participation and human development in EU countries;

(3) to build up a deep hierarchical clustering of EU countries;

The research framework is completed with the research hypotheses we sought to verify and, based on the results, to discover which ones are validated and invalidated. There are three research hypotheses:

Hypothesis 1 (H1): E-participation significantly influences the Human Development Index in EU countries from 2010-2022;

Hypothesis 2 (H2): Internet use increases the Human Development Index in EU countries;

Hypothesis 3 (H3): There are significant gaps between EU countries regarding implementation of e-government and e-participation.

The research variables selected from different international databases helped us know their evolution over time and the significant correlations in different EU countries. Table 1 contains the main research variables. They represent time series from 2010-2022 and have been collected for the 27 EU members from databases such as Eurostat, the UN E-Government Knowledgebase, and the UN Development Program. The UN E-Government Knowledgebase is a benchmarking instrument, enabling a comparative evaluation of e-government progress among UN member countries. It offers an interactive service of e-government advancement in each country, both regionally and globally.

**Table 1:**

The research variables

| ***Variable*** | ***Acronym*** | ***Measurement unit*** | ***Source*** |
|---|---|---|---|
| ***Internet use by individuals*** | INTUSE | Percentage of individuals | Eurostat |
| ***E-Government and Development Index*** | EGDI | [0.1] | publicadministration.un.org |
| ***E-Participation Index*** | EPI | [0.1] | publicadministration.un.org |
| ***Telecommunication Infrastructure Index*** | TII | [0.1] | publicadministration.un.org |
| ***Human Development Index*** | HDI | [0.1] | hdr.undp.org |

Source: Authors' own, 2023.

Table 2 contains the descriptive statistics and the pairwise correlations of the data. Similar combinations of variables have been used in previous papers (Georgescu et al., 2023; Georgescu & Kinnunen, 2021) to check the still-existing digital divide and the similarities in public administration efficiency. Table 2 shows a low standard deviation of HDI, 0.03, compared to the mean, 0.88. It follows that the economic development of EU countries is comparable concerning the definition of HDI. The significant difference between the standard deviation and the mean belongs to INTUSE, which shows the existing digital divide among the EU countries, confirming hypothesis H3. The pairwise correlation matrix shows positive correlations. The variables can contribute positively to one another, as explained later in section 4.

**Table 2:**

Descriptive statistics and pairwise correlation

| | ***HDI*** | ***EGDI*** | ***EPI*** | ***INTUSE*** | ***TII*** |
|---|---|---|---|---|---|
| **Mean** | 0.882025 | 0.772931 | 0.661748 | 80.93836 | 0.700703 |
| **Median** | 0.884 | 0.7817 | 0.7079 | 82.17 | 0.7039 |
| **Maximum** | 0.972 | 1.7474 | 1 | 98.93 | 0.9979 |
| **Minimum** | 0.782 | 0.5421 | 0.0263 | 40.01 | 0.3093 |
| **Std. Dev.** | 0.039889 | 0.112995 | 0.243271 | 11.91885 | 0.139573 |
| **Skewness** | -0.266733 | 1.695486 | -0.715196 | -0.695344 | -0.247912 |
| **Kurtosis** | 2.36398 | 18.68028 | 2.681432 | 2.993161 | 2.473402 |
| | | | | | |
| | ***HDI*** | ***EGDI*** | ***EPI*** | ***INTUSE*** | ***TII*** |
| **HDI** | 1 | 0.648113 | 0.463881 | 0.768605 | 0.673443 |
| **EGDI** | 0.648113 | 1 | 0.618867 | 0.71877 | 0.782042 |
| **EPI** | 0.463881 | 0.618867 | 1 | 0.581192 | 0.562817 |
| **INTUSE** | 0.768605 | 0.71877 | 0.581192 | 1 | 0.814431 |
| **TII** | 0.673443 | 0.782042 | 0.562817 | 0.814431 | 1 |

Source: Authors' own, 2023.

The positive relationship between EGDI and EPI is significant because both concepts concern the use of digital technologies in governance. EPI complements EGDI through the integration of online consultations, public platforms, or participatory

budgeting. These aspects improve the EGDI.

## 4. Research methods and main steps of the research methodology

### 4.1 Fixed and random effects

The following section will apply the fixed and random approach method, a frequently used econometric technique to discover unobserved heterogeneity in a panel data set.

The steps of the fixed and random effects models are the following (Baltagi, 2014):

1. Determine the pooled OLS regression (POLS).
2. Determine FEM.
3. Determine REM.
4. Choose between POLS and FEM by means of the redundant fixed effects test.
5. Choose between FEM and REM by means of the Hausman test.

In longitudinal studies, fixed and random effects models are used to analyse data that involves repeated measurements of the same individuals over time. We point out some reasons why fixed and random effects models are important in the case of longitudinal data.

Longitudinal studies aim to capture individual-level trajectories of change, enabling unique growth, decline, or stability patterns over time. Longitudinal data exhibits temporal correlation where observations closer in time are more related. Fixed and random effects models account for these correlations, trying to avoid autocorrelation and providing more accurate standard estimates.

A panel data regression is described by equation (1):

$$Y_{it}=a + bX_{it} + \varepsilon_{it} \quad (1)$$

where Y is the dependent variable, X is the explanatory variable, Ɛ is the error term, t is time, i is the individual, and a and b are coefficients.

The fixed effects model (FEM) includes individual-specific and time-invariant characteristics, which cannot be directly observed in data. The random effects model (REM) assumes that the individual-specific effects are not correlated with the observed variables. REM parameters are estimated employing the maximum likelihood function by pooling information across individuals. The choice between FEM and REM is made according to the problem's nature, the data set's specificity and underlying assumptions. The Hausman test (Hausman, 1978) is applied to compare the suitability of FEM or REM.

The panel data model (2) has the following specification (2):

$$HDI_{it} = a_0 + a_1 EPI_{it} + a_2 TII_{it} + a_3 EGDI_{it} + a_4 INTUSE_{it} + \delta_i + \varepsilon_{it} \quad (2)$$

$\delta_i$ represents the fixed or random effects for country i, i=1,…, 27 countries. $\varepsilon_{it}$ is the error term, i=1,…, 27, t is the time from 2010 to 2022. $\delta_i$ captures heterogeneity across countries.

The fixed and random effects model is continued with hierarchical clustering of the 27 EU countries for 2022 using the same 5 variables.

### 4.2 Hierarchical clustering and Ward's algorithm

The advantages of hierarchical clustering are detailed information about the similarities among the observations, not being sensitive to initial conditions, and being less sensitive to outliers and cluster shapes. A property specific only to hierarchical clustering is the clusters' granularity levels, which can be analyzed as sub-clusters.

In order to deepen the analysis and identify the hierarchical peculiarities of the subclusters, we chose to use Ward's algorithm. Ward's method (Ward, 1963) is frequently used for hierarchical clustering based on a sum of squares criterion (Kaufman & Rousseeuw, 2005; Nowak, 2021). In the first sequence of the research process, we clustered the EU countries into four clusters. In the second sequence, we represented the dendrogram as a graph with a tree structure. The leaves of the dendrogram are the graph nodes and the branches are the graph edges.

We applied Ward's algorithm in the third sequence to produce compact and even-sized clusters (Szmrecsanyi, 2012). First, each cluster contains only one object. A predefined number of clusters denoted by n are merged such that finally, only one cluster containing the whole dataset is obtained. As new clusters are created, the variance is minimised such that the total sum of squared is computed (Romesburg, 2004; Kassambara, 2017; Roszko-Wójtowicz & Grzelak, 2021).

Ward's algorithm has the following steps:

1. Determination of a cluster's mean.
2. Identifying the distances between the objects of a cluster and the cluster's mean.
3. Squaring and summing the differences between the objects of a cluster and the mean of that cluster.
4. Adding all sums of squares.
5. Computing the total sum of squares.

Ward's algorithm is based on maximising the degree of cluster homogeneity of clusters or, equivalently, on intracluster variability minimisation given by the total sum of squares. The merger of two clusters increases the total sum of squares. The cophenetic

coefficient checks the clustering validity (Farris, 1969).

In the next section, we present the empirical results and discussions.

## 5. Main results and discussion

In this paper, we first compare the fixed effects, random effects, and OLS estimations for the 27 EU panel data sets to see the most critical determinants of HDI. In the second part, we cluster the 27 EU countries in 4 clusters by Ward's hierarchical algorithm. A cophenetic coefficient tests the clustering reliability.

### 5.1 Results discussions based on the fixed effects estimator versus the random effects' estimator

First, we compare the pooled OLS regression (POLS) and FEM (Fixed Effects Model) employing the redundant fixed effects test. We check the null hypothesis, which says that POLS is chosen, versus the alternative hypothesis that FEM is chosen.

**Table 2:**

Redundant fixed effects test results

| *Effects Test* | *Statistic* | *d.f.* | *Probability* |
|---|---|---|---|
| **Cross-section F** | 73.22 | -26.29 | 0.00 |
| **Cross-section Chi-square** | 651.67 | 29 | 0.00 |

Note: d.f. = degrees of freedom

Source: Authors' own, 2023.

Both probabilities being less than 0.05, one accepts the alternative hypothesis that FEM is chosen. Next, we choose between FEM and REM (Random Effect Model) employing the Hausman test. The null hypothesis of choosing REM is checked versus the alternative hypothesis of choosing FEM. The Hausman test statistic asymptotically follows the Chi-square distribution. Using the Chi-square statistic of 32.85, we obtain the p-value p=0.00.

**Table 3:**

Hausman test results

| *Test summary* | *Chi-square statistic* | *Chi-square d.f.* | *Probability* |
|---|---|---|---|
| **Cross-section random** | 32.85 | 4 | 0.00 |

Source: Authors' own, 2023.

Since the p-value of the Hausman test is less than 0.05, the alternative hypothesis, namely, FEM, is selected. Table 4 contains the panel data estimation using HDI as a dependent variable. The estimations include REM, FEM, and POLS.

**Table 4:**

Panel least squares with cross-section random and fixed effects

| | ***Cross-Section Random Effect*** | | ***Fixed Effect*** | | ***POLS*** | |
|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **t-statistic** | **Coefficient** | **t-statistic** | **Coefficient** | **t-statistic** |
| ***EPI*** | 0.014 | 4.79 (0.00) | 0.019 | 5.35 (0.00) | -0.006 | -0.86 (0.39) |
| ***TII*** | 0.032 | 3.53 (0.00) | 0.036 | 3.91 (0.00) | 0.009 | 0.49 (0.61) |
| ***EGDI*** | -0.009 | -0.98 (0.32) | -0.011 | -1.28 (0.20) | 0.070 | 3.30 (0.00) |
| ***INTUSE*** | 0.00 | 5.26 (0.00) | 0.0006 | 4.22 (0.00) | 0.002 | 9,81 (0.00) |
| ***C*** | 0.790 | 89.51 (0.00) | 0.799 | 98.04 (0.00) | 0.656 | 56.82 (0.00) |
| ***Cross-section random S.D./Rho*** | | 0.02 (0.81) | | | | |
| ***Idiosyncratic random S.D./Rho*** | | 0.009 (0.18) | | | | |
| ***R-squared*** | | 0.56 | | 0.94 | | 0.61 |
| ***Adjusted R-squared*** | | 0.55 | | 0.92 | | 0.60 |
| ***S.E. of regression*** | | 0.009 | | 0.009 | | 0.02 |
| ***F-statistic*** | | 101.45 (0.00) | | 178.36 (0.00) | | 124.80 (0.00) |
| ***Akaike Information Criterion*** | | | | -6.37 | | -4.52 |
| ***Schwartz Criterion*** | | | | -6.01 | | -4.46 |

Source: Authors' own, 2023.

From Table 4, we can see that in the FEM estimator, all regressors, except EGDI, positively influence HDI with a p-value less than 0.05. The probabilities are shown in parentheses. Among REM, FEM and POLS, FEM has the most explanatory power, given by R-squared. FEM is a good fit since F-statistic=178.36 (p=0.00<0.01).

A 1% increase in TII leads to a 0.036% increase in HDI, meaning advancements in telecommunication infrastructure can improve human development. A positive

relationship between TII and HDI is given by the following factors: access to information and knowledge, economic development, health and well-being, and social inclusion. Internet access and mobile connectivity facilitate the exchange and spreading of information and knowledge. People have enhanced access to education. Telecommunication infrastructure means improved communication networks and investments in e-commerce and digital services, stimulating economic development. Telemedicine services and remote consultations provide a higher level of medical expertise, also improving HDI. Increased connectivity reduces the digital divide (Mesa, 2023) and enables remote communities access to public services.

A 1% increase in EPI leads to a 0.019% increase in HDI. E-participation makes access to information and public issues easier by engaging citizens in making public their opinions. Thus, it contributes to transparency and good governance. Through e-participation, the communication channels between citizens and public administration are facilitated. The HDI components, social welfare, education, and healthcare, are improved through more efficient service delivery.

The above confirms hypothesis H1. The study by Pirannejad et al. (2019) enhances EPI with additional dimensions, namely HDI and the Democracy Index, to encompass societal aspects. The most important criteria for evaluating e-participation initiatives are political rights and civil liberties.

A 1% increase in INTUSE exerts a 0.0006% increase in HDI. The individuals have facile access to information and learning resources. The Internet offers significant economic opportunities such as e-commerce platforms, online businesses, and remote work. These online activities improve economic growth, leading to more proficient Internet users with improved digital skills, which could increase productivity, thereby validating hypothesis H2.

A 1% increase in EGDI exerts a statistically insignificant 0.011% decrease in HDI. This relationship is generally positive because e-government initiatives increase transparency and accountability. This relationship can be influenced by socio-economic factors specific to each country, such as income inequality or the quality of governance.

The advantage of FEM over REM is its ability to control for unobserved time-invariant heterogeneity across individuals. FEM requires fewer assumptions than REM. In an FEM, one does not need to make assumptions between the individual-specific effects and the independent variables. FEM is often preferred when one is interested in causal relationships and policy implications.

## 5.2 Results discussions using the hierarchical clustering and Ward's algorithm

Next, we apply the Ward hierarchical clustering and identify the following four clusters:

Cluster 1 contains Bulgaria, Hungary, Romania, and Slovakia.

Cluster 2 contains Croatia, Czechia, Latvia, Lithuania, Poland, Slovenia, Greece, Italy, and Portugal.

Cluster 3 contains Estonia, Netherlands, Finland, and Denmark.

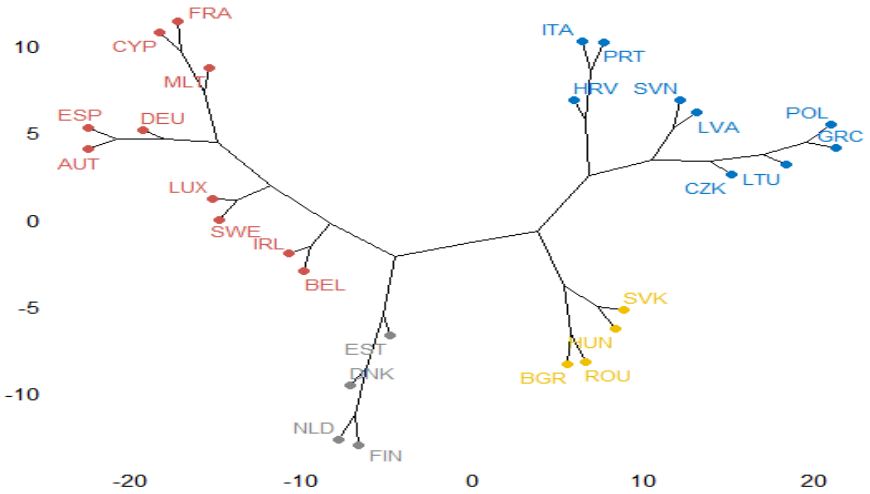
Cluster 4 contains Belgium, Germany, Ireland, Spain, France, Cyprus, Luxembourg, Malta, Austria, and Sweden.

Then, we represented them as a figure and cluster plot (see Figures 1 and 2).

In the dendrogram in Figure 1, we check the clustering validity by computing the correlation coefficient between the cophenetic distances and the distance matrix (Kassambara, 2017). In our case, a correlation coefficient of 0.62 is considered acceptable for proving that the hierarchical clustering reflects the data structure.

**Figure 1:**

The figure's cluster's structure determined by Ward's algorithm




Source: Authors' own, 2023.

The cluster characterisation is made according to the cluster means in Table 5.

**Table 5:**

Cluster means

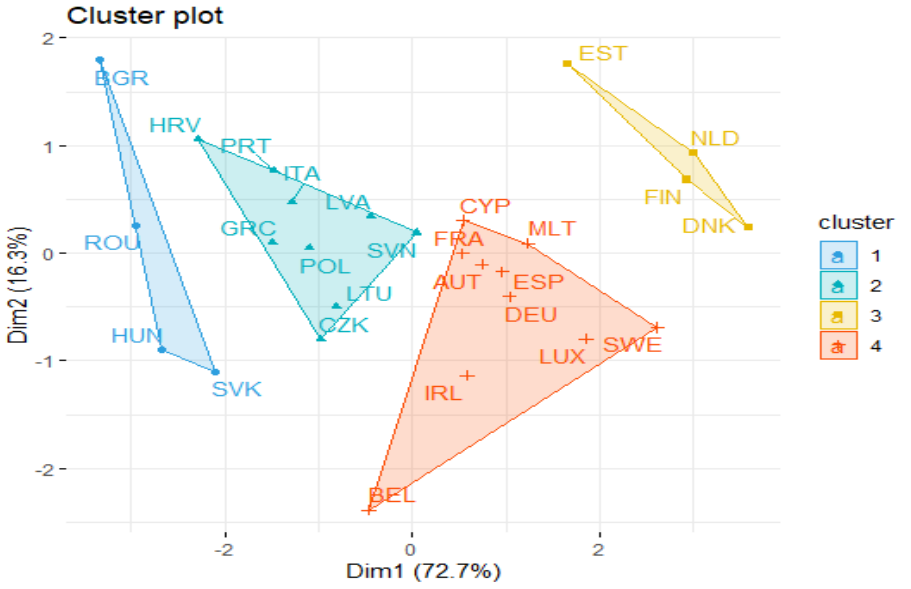
| Cluster | INTUSE | EGDI | EPI | TII | HDI |
|---|---|---|---|---|---|
| 1 | 85.71 | 0.78 | 0.59 | 0.80 | 083 |
| 2 | 86.70 | 0.84 | 0.68 | 0.82 | 0.88 |
| 3 | 95.34 | 0.95 | 0.95 | 0.94 | 0.93 |
| 4 | 93.65 | 0.88 | 0.71 | 0.89 | 0.92 |

Source: Authors' own, 2023.

As shown in Figure 2, Cluster 3 contains two Nordic countries, Estonia and Netherlands and places first concerning all variables. Cluster 4, containing most of the well-developed economies, occupies second place. Romania, Bulgaria and the other two economies from Cluster 1 place last.

**Figure 2:**

Cluster plot of Ward's method




Source: Authors' own, 2023.

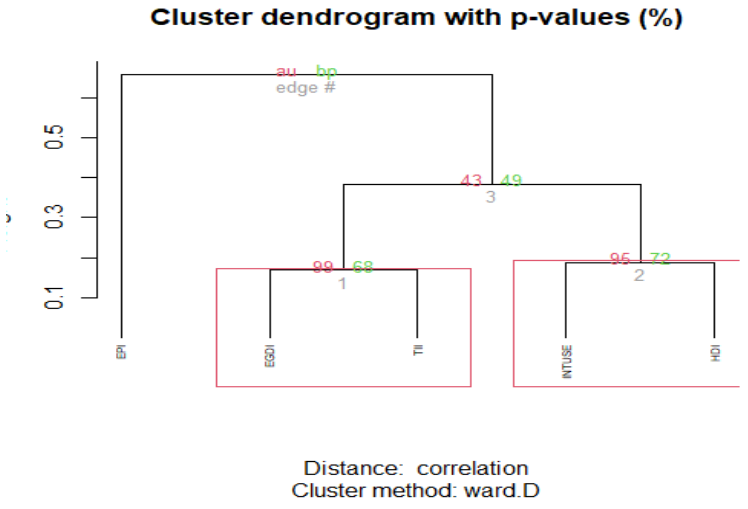
These results are approximately similar to papers by Androniceanu and Georgescu (2023), Androniceanu et al. (2022b), and Shishmanov (2022). A similar classification of

EU countries is made using the DESI index, which shows a positive trend from one year to the next both for Romania and Bulgaria, which occupy the last two places, constantly swapping them (Shishmanov, 2022). The Nordic countries are the most digitalised and rank in top positions according to global indices. They invest considerable sums in digital infrastructure, education, and public services. Their industries focus on innovation and technology. The Netherlands has programmes to promote digitalisation in e-commerce, cyber security and smart cities. Estonia is among the digital leaders in its innovative e-government solutions. Estonia's programmes include a digital electoral system, a digital identity system (e-Residency) and other public digital services. The success in digitalisation of the countries in cluster 3 is owed to supportive policies and regulations, political will, significant investments in innovation, and striving to bridge the digital divide. The countries in cluster 1 face challenges concerning digitalisation and EGDI compared to other countries. Their position in the lower rankings is caused by factors such as the digital infrastructure, e-government services and the digital divide. Even though these countries have made substantial progress in implementing initiatives, there are still considerable disparities in the use of digital technologies by the population in remote regions. The delivery of e-government services has to improve in terms of user-friendliness and accessibility. The results of hierarchical clustering confirm hypothesis H3.

For each hierarchical clustering, it is necessary to compute the p-value employing the bootstrap clustering method (Suzuki & Shimodaira, 2015). The columns of the datasets are clustered, resulting in the cluster dendrogram presented in Figure 3.

**Figure 3:**

Cluster dendrogram in columns




Source: Authors' own, 2023.

Bootstrap probabilities (BP) measure the frequency of cluster identification in the bootstrap copies. Approximately unbiased probabilities (AU) are obtained by bootstrap resampling (Suzuki & Shimodaira, 2015). In Figure 3, the clusters marked by red rectangles have AU greater than 95%, representing that dataset. Higher AU values suggest more reliable clusters. In our case, EGDI and TII form one cluster, while INTUSE and HDI form a second cluster. EPI is a singleton. EGDI and TII are complementary indicators helpful in understanding a country's digital ecosystem. Both EGDI and TII are enablers of digital transformation. EGDI relies on technological innovation, while e-government programmes facilitate TII. In another cluster, HDI and INTUSE are interconnected, as INTUSE impacts a country's human development. Through digital skills development programmes, people become involved in online activities. Internet access generates economic opportunities, generating income and reducing unemployment, key elements of HDI.

### 5.3 Limitations of the research

The main limitations of the research are the small number of variables included in the research and the time period. In future research, we intend to increase the number of variables, deepen the correlative analysis and extend the time interval for the analysis.

## 6. Conclusion

In this paper, we applied the fixed effects versus random effects model to study the implications of INTUSE, TTI, EPI, and EGDI on HDI for the EU panel dataset from 2010-2022. By the Hausman test, FEM was chosen to reflect these implications. The FEM results showed that INTUSE, TTI and EPI have a positive and statistically significant effect on HDI. The only not statistically significant explainer of HDI proved to be EGDI. This result could be motivated by considering additional variables, other data sources, or limited available datasets.

In the second part of the paper, we applied Ward's method to obtain a hierarchical clustering of the 27 EU countries using the same indicators collected for 2022. Four clusters were obtained, among which Cluster 4 of two Nordic countries, the Netherlands and Estonia, rank on top. At the same time, Romania, Bulgaria, and the other two countries occupy the last place. The hierarchical clustering emphasised the still-existing digital divide among EU countries. The digital divide occurs because of the lack of Internet access for marginalised populations, resulting in socioeconomic disparities. Therefore, some EU countries should have initiatives to bridge the gap to digital technologies. Another implication of digital technologies at the level of public administration is corruption reduction (Santiso, 2022).

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# Who Participates in Participatory Budgeting? Unravelling of Who Shows Up

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**Abstract:**

Participatory budgeting (PB) is often described as one of the most successful instruments for participation, engaging people in decision-making, and prioritising where to allocate public money. It has travelled in the form of comprehensive administrative reforms and politically neutral devices to improve governance, especially when arriving to Europe and the Central Eastern European region (CEE). Recently, it was brought to light that PB development in the CEE region was undoubtedly different from the original case; instead of resulting in radical changes to increase activities in favour of marginalised groups, it results only in small changes. This work presents a single case study of the Czech city Brno; information consisting of age, gender, education, economic activity, and preferences of all the PB participants was collated for five years, from its inception in 2017 till 2021. In this case, we observe and analyse the particularities of the participant group, not only in static terms of one year but also drafting a trend on how the participatory base developed throughout the five years. Both desk and field research were employed to gather data. The turnout at PB voting does not copy the general demographic composition of Brno's residents. Results show that some segments are represented by PB voters with higher proportions, making them more involved in deciding which projects in the city are to be executed using PB. In this way, the description of data-gathering in Brno contributes to the

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methodology of quantitative data gathering, which might be expanded to other CEE cities in order to elaborate comparisons in the future.

**Keywords:**
budgetary innovation, implementation of innovation, participation, participatory budgeting[3]

## 1. Introduction

Participatory budgeting (hereafter PB) is based on the primary idea of inclusion and inviting the broader society into public decision-making. Many scholars have historically elaborated on the importance and efficiency of participation in democracy (Pareto, 1983; Mosca, 1939, Dahl [1972] 1995, 1994; Schumpeter, 1942/2010). Nonetheless, in 1994, in the work Democratic Dilemma System Effectiveness vs Citizens Participation, criticism of excluding citizens from deliberation in the search for effectiveness would be "politically and morally wrong" (Dahl, 1994) can be found. A different insight to that view, almost as opposing current advocates that the participation creates stronger citizens who are more conscious of political decisions and active when it comes to decision-making (Pateman, 1970; Barber, 1984). PB, as indicated by the name, is a process heavily based on inclusion and participation. It actively includes citizen in decision-making. Goldfrank (2007) defined PB is a "process by which citizens, either as individuals or through civic associations, can voluntarily and regularly contribute to decision-making over at least a part of a public budget" (Goldfrank, 2007, p. 92). Moreover, thanks to its innovative character, it can be seen as an improvement on the path of innovation in the public sector (Pollitt & Bouckaert, 2011) that develops a political culture of communication and cooperation with citizens (Cabannes, 2004). PB first emerged in Porto Alegre in Brazil in 1989, shortly after introducing the new constitution oriented on reinforcing citizens' participation to prevent corruption and clientelism characteristic for the Southern Cone of Latin America, with Brazil being no exception. Originally, it was implemented to give a missing voice to vulnerable and marginalised groups of Porto Alegre (De Sousa Santos, 1998; Abers, 2000; Wampler, 2007; McNulty, 2012). Satterthwaite (2004) determines vulnerability in this context of urban settings as a condition based on the situation occurring and the possibility of responding to it. Situations might be shocks, such as exposure to natural conditions, like floods or earthquakes, or stress from the gradual devaluation of household income. The possibility of the household responding to it may be limited by the lack of financial, social, organisational, and personal resources to deal with the conditions and stress caused. "The more a household income level determines

[3] The conversion rate of CZK to EURO is approximately 1 EURO = CZK 24.66. Information from 15th of October 2023 (ČNB, 2023)

their access to housing and basic services, the more vulnerable they are to becoming "poor" when the number of income earners within the household is at its lowest and the number of dependents at its highest" (Satterthwaite, 1997, p.12). Therefore, unemployment directly, and also an acquired or not acquired level of education indirectly, is an indication the vulnerability of the segment.

Several studies of the original case described the structure of inhabitants and participants in PB in Porto Alegre (Abers, 2000; de Sousa Santos, 1998; Marquetti, 2003). Responding to the question of whether the citizens of Porto Alegre gained power with PB and identifying who these individuals are. Research conducted by Marquetti (2003) shows the structure of the PB participants, either in deliberative forums or voting rounds. In early adaptations in Porto Alegre in 1998, 11% of families had less than two minimum monthly salary incomes. In the structure of voters 30% of voters in the individual rounds came from nuclear families with less than two minimum salaries (Marquetti, 2003). The above demonstrates that most participants in all PB structures have a family income below that of a typical middle-class family. In the voting rounds, the typical participant has no formal education or has not completed primary education (Marquetti, 2003). Studies show PB participants were poorer and less educated than the average Porto Alegre resident.

Regarding the gender division of participants on lower and higher levels of decision-making, studies show that women participated in relative parity to men at lower levels of the decision-making process, but when it came to participation in forums, that was predominantly male (Abers, 2000). The shift happened over time, in 2005 when the majority of respondents in the conducted research that were elected at least one was female. The change in this proportion might have also been caused by a requirement issued in 2003 requiring women make up half the candidates on electoral slates (Abers et al., 2018). Since Porto Alegre, as the first case, is often depicted as the PB flagship, very few available articles talk about PB without mentioning Porto Alegre. Many theoretical frameworks regarding who participates arose from this case, drafting conclusions on the participant base or the benefits of PB towards the citizens (e.g. Shah, 2007; Wampler, 2007; Avritzer, 2010).

Even though many PB applications have taken inspiration from Porto Alegre, the reality shows a difference in applications based on the local customs and manner of introducing PB to other countries. Since the new millennium began, PB spread to Europe (de Vries et al., 2022; Dias et al., 2019; Dias et al., 2021; Džinić et al., 2016). Countries from the eastern part of Europe were the early adopters. The countries of Central Eastern Europe (hereafter CEE) were amongt the first ones to pilot a PB process in Europe (Džinić, et al., 2016; Popławski & Gawłowski, 2019; Švaljek et al., 2019; Klimovský et al., 2021). A common feature of early adopters is that the importers of the idea of PB in these cases were various NGOs, which, however, generally had limited capacities. Hence, these countries' first PB initiatives were somewhat local experiments (Klimovský et al., 2021).

As recently brought to light by de Vries et al. (2022), when applying PB in Europe, due to different budgetary approaches and low dedication of the financial resources, in CEE "the terminology of Participatory Budgeting remained, but the goals and tools to achieve the goals resulted only in marginal changes in the status quo in municipalities in European countries practising PB, instead of resulting in radical changes to increase spending in favour of marginalised groups" (de Vries et al., 2022). The initiative's character and result vary from the original case, and PB was introduced in the CEE region as a different tool, which brought a different segment of participants.

In applying PB in CEE, Klimovský et al. (2021) categorise the Czech Republic among the early majority adopters. In particular, the city of Brno's PB was established in 2017. It has been an active process continuously since the pilot year. Through this initiative, the city of Brno redistributes CZK 30 million (Czech Crowns4), hence, it is the largest participatory budget in terms of allocated resources in the Czech Republic.

This work presents the case of PB in Brno, addresses the question of who participates in PB, presents the system of data collation applied in Brno, and analyses the collated information consisting of age, gender, education, economic activity, and preferences of all PB participants for five years, from its inception in 2017 till 2021. In this case, we observe and analyse the particularities of the participant group, not only in static terms of one-year period but also drafting a trend on how the participatory base developed throughout the four years. Both desk and field research were employed.

On this basis, it is possible to indicate groups that stop participating in PB and whose representation, on the contrary, will strengthen in the upcoming years. Furthermore, to address the research question, who is the target group of the PB in Brno, by addressing a partial question about how the participatory base developed throughout the five years, from 2017 to 2021. The above will offer a base to evaluate if implementing PB in Brno also captured a vulnerable and marginalised audience and shifted from support of unheard, marginalised citizens, or if, on the other hand, shifted to more widespread support of the participant group. From a theoretical point of view, this paper contributes to research on PB turnout since the question who participates is still somewhat unaddressed due to often non-existent data in this field. From a practical point of view, the result of the research provides important data that would enable the municipality to optimise communication channels to address less represented groups of the population. From the methodological point of view, this paper offers a documented case of data collation that might serve as a base for further data-collation in other CEE cities for future comparison.

4 The conversion rate of CZK to EURO is approximately 1 EURO = CZK 24.66. Information from 15th of October 2023 (ČNB, 2023)

## 2. Role, determinants and determinations of PB, literature overview

Participation budgeting is a budgetary innovation observed travelling around the globe. While it is spreading, it is adapting and adjusting (Sintomer et al., 2012; Sintomer et al., 2013; Lehtonen, 2021) to the customs and needs of areas, municipalities, regions, provinces or in some cases, even institutions such schools (Balážová, 2021) or different segments of society (Klimovský et al., 2022; Annunziata & Arena, 2021). A comprehensive study of the original case has been published. Most of the literature describe the dynamics of the case itself (Abers, 2000; de Sousa Santos, 1998; Baiocchi, 2001; Baiocchi, 2005) and its further applications and limitations (Marquetti, 2003; Marquetti et al., 2011). It must be considered that the process modifies and evolves as time proceeds, even in Porto Alegre, the pilot case. In the research concluding PB's purpose 20 years after its pilot case, it has been observed that PB, by its openness to all people, effectiveness, and concerned decisions, is "turning Porto Alegre's PB into one of the most radical examples of participatory democracy" (Leubolt et al., 2008, p. 15).

During all these years, many adjectives have been used in combination with PB. It has been labelled a tool for strengthening the voice of marginalised segments (Hernández-Medina, 2010) empowerment (Fung & Wright, 2001; Nylen, 2002), teaching concepts of democracy (Schugurensky, 2013) stimulating participation (Madej, 2019) or even of better redistribution (De Sousa Santos, 2002).

Due to its primality and thorough knowledge of the Porto Alegre case, it is often used as one of the models of PB applications regarding its application in European conditions (Krenjova & Raudla, 2013). Since the beginning of the new millennium, PB spread extensively to Europe (de Vries et al., 2022; Dias et al., 2021; Džinić et al., 2016). CEE countries were among the first to pilot PB processes in Europe (Džinić et al., 2016; Kersting et al., 2016; Popławski & Gawłowski, 2019; Švaljek et al., 2019; Sintomer et al., 2008; Baiocchi & Ganuza, 2014; Krenjova & Raudla, 2013; Minárik, 2020; Klimovský et al., 2021; Mączka et al., 2021; Murray Svidroňová & Klimovský, 2022; …).

The city of Brno introduced BB in 2017. Currently, regarding the volume of funds, it is the largest initiative of its kind in the Czech Republic (Klimovský et al., 2022). Brno's strategy aims to enhance the public's inclusivity and participation in the city's strategy (Kukučková & Bakoš, 2019; Brno 2050, 2020)). The Intelligent Cities Challenge further reinforces this strategy, a European Commission initiative supporting European cities, where in Brno: Intelligent City Transformation Overview, the final city deliverable, the initiative of "enhancing citizen participation, connectivity, and community", is one of the aims (European Commission, 2022). This article offers a unique insight into one case in order to submerge deeper and, based on the observation of quantitative data, the PB base will be drafted. It will serve for a further hypothesis on the inclusiveness of PB based on the portfolio of participants in Brno and expand this hypothesis towards the other CEE countries.

It is possible to come across abundant literature on the determinants and drivers

of PB (Manes-Rossi et al., 2021) discussing what incentivises PB (Ebdon, 2000; Zhang & Liao, 2011; Klun & Benčina, 2021; Balážová et al., 2022) or endure its sustainability (Murray Svidroňová et al., 2023).

**Table 1:**

Overview of PB sustainability determinants in the literature

| Category | Determinant | Research |
|---|---|---|
| Economic | Better budget allocation | Švaljek et al., 2019; Akyel et al., 2012 |
| | Budgetary process | Tanase, 2013; Callahan, 2002 |
| | Efficiency | Sintomer et al., 2012; Džinić et al., 2016 |
| | Economic crises or large-scale crises with significant economic impacts, uncertainty, and challenging predictions | Cho et al., 2021; Baranowski, 2020; Bardovič and Gašparík, 2021 |
| Social and political | Social justice, gender mainstreaming | Sintomer et al., 2016; Baiocchi & Ganuza, 2014; Lüchmann, 2017 |
| | Citizen empowerment, socio-economic development, culture | Saguin, 2018; Wampler & Touchton, 2018; Röcke, 2014; Talpin, 2012 |
| | Level of administration maturity, level of political decentralisation | Beuermann & Amelina, 2018 |
| | Voter turnout, direct democracy | Kukučková & Bakoš, 2019; Freitag & Stadelmann-Steffen, 2010 |
| | Democratic change, good governance | Cabannes & Lipietz, 2017; Baiocchi, 2001 |
| | Re-election of the party of the mayor, political affiliation of the mayor | Spada, 2009; Wampler & Avritzer, 2005; Klimovský and Murray Svidroňová, 2021; Klun & Benčina, 2021 |
| | Transparency of political decisions, transparency of public resources | Jacobi, 1999; Carroll et al., 2016; Cabannes & Lipietz, 2017 |
| Organisational and institutional (legal) | Diffusion mechanism, organisational assistance | Goldfrank, 2012; Oliveira, 2017; Milosavljević et al., 2022; Klimovský et al., 2021 |
| | Use of ICTs, eParticipation, voting methods | Peixoto, 2009; Barros & Sampaio, 2016; Popławski, 2020; Kukučková & Poláchová, 2021; Mærøe et al., 2020; Špaček, 2022 |
| | Formal integration into overall structure of public budget | Balážová et al., 2022 |
| | (Non-)existence of legal regulation directly focused on PB | Kozłowski & Bernaciak, 2022; Mączka et al., 2021; Murray Svidroňová and Klimovský, 2022 |

Source: Murray Svidroňová et al., 2023.

Bartocci et al. 2022 interpreted PB as a concept of an idea. They compare the number of publications dedicated to PB, at each of the idea's stages obtained since the pilot case in Porto Alegre within the longitudinal thematic analyses. The primary phases of idea, namely idea generation and idea elaboration, had far more published studies behind them than the following: idea production and idea impact. It shows the current focus of the PB research and the volumes that are dedicated to each stage. It proves that the literature grows more sparce on subsequent stages of the PB processes (such as idea production and idea impact) even though studies on how participation adequately improves the dialogue between citizens and government using participation techniques

(Ebdon & Franklin, 2006). Therefore, in this study, the focus is mainly on idea production and implementing PB through participatory mechanisms, and focus on the participation base of voters and its structure. The development throughout the years has been observed to see what participation bases PB was attracting and if the significant changes can be spotted over five years. PB adoptions may be considered a stimulus to promote participation in other areas (Nylen, 2002) as the causality between PB participation decreases and PB abandonment has been highlighted (Žepič et al., 2017). In single-area case studies, positive participation influences have been documented in holding the government accountable for fiscal decisions (Justice & Dülger, 2009; Park et al., 2022). The research structured other way around, on how PB impacts citizen participation and evolves over time, is scarce. Most studies try to assess the final participation outcomes primarily through qualitative analysis.

Meanwhile, single qualitative studies of PB are prevailing and quantitative studies to confirm a hypothesis or offer a base for further comparison are lacking (Bartocci et al., 2022). A possible explanation might be that the lack of the quantitative studies is caused partially by the lack of processes on how to collate data sustainably with the standardised methodology that would also allow their comparison. Lack of quantitative data is a common limitation in research regarding PB and participation (Peixoto, 2009; Spada et al., 2016; Touchton et al., 2019; Vitálišová et al., 2021…), and it is perhaps indicative of a necessity for closer collaboration with municipalities when performing qualitative research to develop a methodology on data collation. This study offers a dataset of information on participants collated over five years and a description of the method to be reproduced in the future within other local governments or institutions collating information on their participant base.

Bartocci et al. (2022) have underlined the risk of using PB as a somewhat "symbolical" tool. Instead of focusing on PB, focus on obtaining legitimacy and exploiting PB to reinforce existing power mechanisms. Regarding this, a suspicion was recently brought to light by Vries et al. (2022) that only a particular group participates in PB activities and that PB is generating a mild difference contrary to radical change and involvement of marginalised groups. This article provides numbers to support the hypothesis on the case of one city, Brno, which widens the suspicion that this might be the case of PB applications in CEE.

On the one hand, PB is often labelled as a tool that impacts the inclusion of marginalised segments (Hernández-Medina, 2010), empowering people (Fung & Wright, 2001) and improving redistribution (De Sousa Santos, 2002), on the other hand, the suspicion has been raised, that in CEE it has been applied in a far less impactful manner (de Vries et al., 2022. Meanwhile, most try to assess the final participation outcomes, primarily through qualitative analysis. Still, while single qualitative studies of PB are trending, quantitative studies to confirm the hypothesis or offer a base for further comparison are lacking (Bartocci et al., 2022). This paper aims to enrich the literature by providing quantitative data from one single case, aiming to support or challenge the hypothesis previously drafted on CEE (de Vries et al., 2022) on the case of Brno.

## 3. Research design

The research focuses on the structure of the population that participated in the voting process of PB in Brno. By the established rule, these are residents with permanent residence in the city.

The research is structured as a one-case study focusing on the city of Brno. A series of interviews were conducted with administrative staff of the City Hall from June to August 2021. The interviews were conducted with employees from legal, economic, marketing, investment, and managerial positions; in total, seven interviews were conducted, from which we were provided with the raw numbers based on the interviews put into the context. The sample comprised 73 095 responses collected from PB participants in PB voting over five years, 2017-2021.

The survey amongst the participants was realised simultaneously with the voting. Therefore, the city municipality collated data in real-time. Every eligible citizen could participate. Data was collated from the launch of PB in 2017 till the present. The last voting took place in 2021. The residents could answer questions about age, gender, education, and economic activity. The structure of questionnaire can be seen in Table 2.

The survey questions were closed, and participation was voluntary. Nevertheless, we managed to collate answers from most of the sample. More than 70% of participants answered every question in each of five years of processes.

**Table 2:**

Structure of the survey conducted on PB voters in Brno (2017-2021)

| *Question* | *Gender* | *Age* | *Education* | *Employment* | *Times voted* |
|---|---|---|---|---|---|
| **Options** | • Male<br>• Female | • 18-30<br>• 31-45<br>• 46-60<br>• 61-75<br>• 76+ | • Primary school<br>• Secondary school<br>• University | • Student<br>• Working<br>• Unemployed<br>• Parental<br>• Retiree | • 1x<br>• 2x<br>• 3x<br>• 4x |

Source: Authors' own, 2023.

No modifications were made since the beginning of the project. It is possible to monitor relatively accurately the trends of the participation structure in individual years. Due to the evaluated amount of the responses, it is possible to draft a hypothesis based on the participants in Brno and their structure. The results were compared to demographic composition of Brno's residents to determine whether they align or uncover disparities.

## 4. Findings and discussion

The whole process of PB in Brno is organised under the city council's management, which has set up a separate department in its structures for this purpose. Currently, five people are employed in implementing PB. Residents of the city who have permanent residence can participate in this process through the website named "Dáme na Vás", "We value your opinion", which the city set up. Within Brno, this site enables submitting projects that can only be performed online. At the same time, pages are utilised to show the positive perception of submitted projects, initially obtaining 300 positive reactions, the so-called likes.

Only if the project receives significant popular support in the form of the so-called "likes", markers/votes of support given by citizens to evidence the project they like, can the municipality evaluate the possibility of realising it. In other words, if the project does not receive enough likes, it does not proceed to the further stages of the PB process. The Department of Participation carries out project assessment in cooperation with the individual departments of the City Hall. The possibility of voting is tied to permanent residence (only citizens with permanent residence can participate), which the city verifies through an identity card or city card called Brno ID. By this means, the city tries to motivate people to declare themselves for permanent residence, thereby increasing their financial income to the budget.

For those cases where citizens do not possess either a computer or IT literacy, the city council allows the use of public computers in the City Hall or in the city libraries. Using a computer is possible at any process stage, from project submission to final vote. A professional consultant is available to facilitate the voting process. The conclusion of PB is at the information/results publication stage, which means publishing information about the individual winning projects on the city's website. Residents can continuously monitor the preparation phases or the individual activities or projects. The city also publishes results for previous years, depending on the city districts where they were implemented (Dáme Na Vás. Participativní Rozpočet, 2022). The city informs about the projects mainly through the website but also uses social networks (mainly Facebook and YouTube), local radio stations, city television, city newspapers and portable information banners in public spaces. The exact amount of each media is not accessible, nor is the budget dedicated to promote each PB.

In the case of Brno, the public is involved in co-decision in three phases, first as proposers, then as evaluators and finally as voters. The most significant number of people are involved in the final voting phase, where the turnout is around 11,000-20,000 people a year. The City of Brno collects individual voters' data when sending the voting form in an anonymous survey. The municipality approaches participants by the same means of communication every year. Nevertheless, the number of participants in each year varies in absolute numbers.

This part of the work presents the results of a case study of the Czech city Brno, where information on age, gender, education, economic activity, and preferences of all

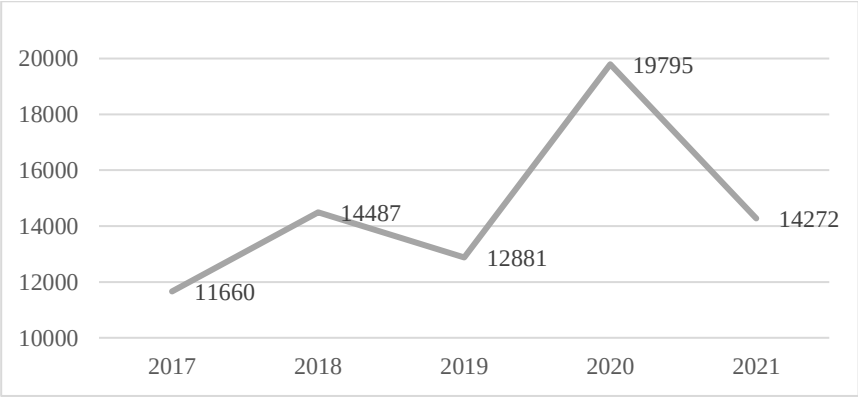
PB was collated. The graphs are designed to show the evolution of the individual demographic and economic proportions from the beginning in 2017 till the recent process in 2021.

A significant increase of about 2,000 voters can be seen. By contrast, there was a slight decrease of around 1,000 voters between the second and third years. A possible explanation could be that shy or more sceptical voters had to observe the first whole cycle to gain confidence to participate in the second round. Further qualitative research is necessary to prove this hypothesis.

In the long run, however, we can talk about a relatively positive trend with the setback in 2021. Nevertheless, from a longer perspective, the number of participants is still growing compared to the first year. While there were 11,660 voters in 2011, 14,272 voters voted to elect the winning PB project in the last year of PB. Graph 1 presents the trajectory of the voter increase. An interesting finding is a significant increase in the number of participants in 2020, when measures were introduced in the Czech Republic to reduce mobility caused by the COVID-19 pandemic (Vláda České republiky, 2020) During this period, the number of participants almost doubled compared to the first year, which might have been caused by the opportunity to participate digitally in PB in Brno. Since all the activities, and especially voting, where the information for this research was collated was possible to perform online.

**Figure 1:**

Number of participants in PB voting rounds (2017-2021)



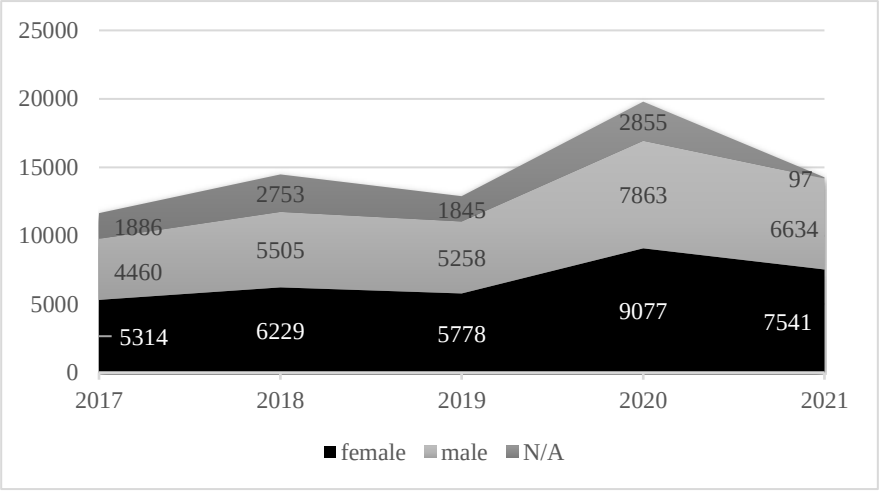

Source: Authors' own, 2023.

From a gender perspective, it can be stated that women rather than men have long used PB. During the five years of its operation, no fundamental changes would change this trend; on the contrary, the share of women participating is growing slightly. Even

in 2020, when there was a significant increase in the number of voters, their structure did not change significantly. Graph 2 shows the absolute numbers of participants from a gender perspective.

**Figure 2:**

Gender share in PB voting rounds (2017-2021)



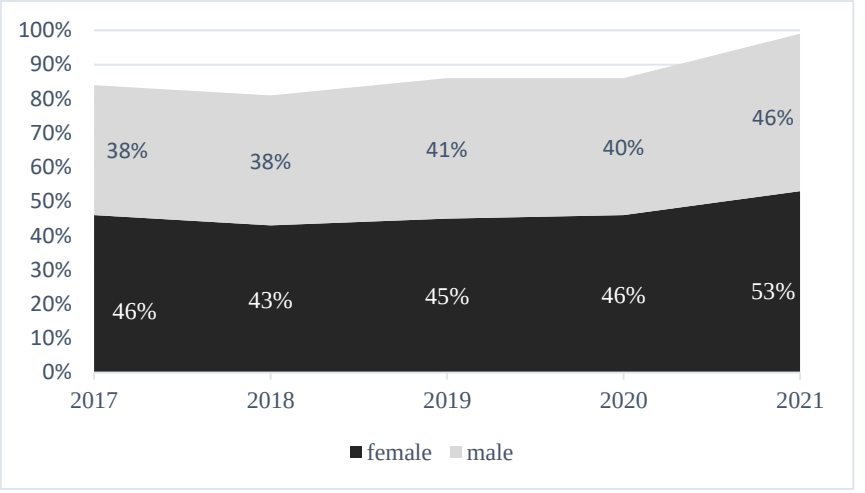

Source: Authors' own, 2023.

As seen in Graph 2., the most significant percentual change in gender share was achieved in 2021; it is at 6-7%, achieved by modifying the questionnaire. Following this modification, participants could not avoid stating their gender, and, therefore, answers not stating gender were addressed and data collated. As a result, the number of people who would not answer the questions decreased to 0.

The proportion of male and female remained the same. From these data, we can say that the structure of people who vote in PB in Brno is almost unchanged regarding gender, with slightly higher female participation at around 54% and male participation remained unchanged as the previous years around 46% as depicted in the Graph 3. When considered from a comparative perspective, the general demographic composition of Brno's residents we reveal a disparity with the results of participants in PB. The gender share of citizens in Brno was 50:50, male to female population (Český Statistický Úrad, 2020, 2022a). Meanwhile, in PB, the share was 46:53, with prevailing female participants. It leads to the conclusion, that female participation is slightly higher than male participation in Brno's PB.

**Figure 3:**

Gender share in % in PB voting rounds (2017-2021)




Source: Authors' own, 2023.

Regarding age distribution, PB in Brno attracts the most people in absolute numbers in the 31-45 category, with almost 45% of all participants in this age range. They are followed by the 18-30 category, which has started to change in the last two years, and people in the 46-60 category have a comparable share. However, from the point of view of long-term monitoring, we can nevertheless state there are no fundamental changes in the age structures from the start of the process. In the first four years, the proportion of people aged 18 to 30 decreased slightly, which might have been caused by the fact that people in this category are ageing, and there might not have been sufficient educational background to enable explaining the process to people joining the process for the first time. Another hypothesis arises in connection to the marketing mix of the city. Seeing a decrease in the youngest age range and, on the other hand, an increase between the ages of 31 to 60 may indicate the communication mix was targeted prevalently at the older participants: their participation rose perceptually higher, and it would be necessary to conduct research in this field.

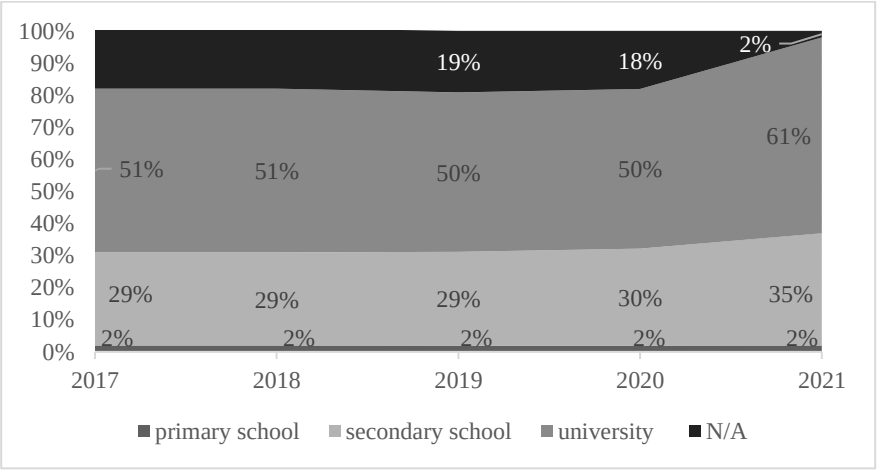
By its size, the 46-60 category is comparable to the age range of 18 to 30. Nonetheless, it has its unique feature; when the questionnaire was altered in 2021, the share of people in this category increased the most, leading to the claim that people belonging to this category did not answer the survey questions in previous years as often as other age groups. The share of people aged 76 and over was the same during the first four years. There was a change in the last year when it still represents 1% of participants, but due to the greater representation of other age structures, there was a decline in people in this category. In general, however, the share of voters in individual categories

varies at the level of percentage units. No age range experienced an increase of more than 6%. From this, observing a particular stability in the public interest is also possible.

Regarding the level of education achieved depicted in Graph 4, the majority, over 80% achieved secondary or higher education. In the last year, 2021, 96% of all participants achieved secondary school education and higher, and the majority, 61%, achieved a university education. It is possible to conclude that when it comes to participation in the city's PB, highly educated people participate. That is also reflected when it comes to economic activity. The proportion of participants whose highest level of education is elementary (up to Year 9 in the Czech Republic) remains steady at 2%, the lowest level.

**Figure 4:**

% Visualisation of education acquired by PB voters (2017-2021)




Source: Authors' own, 2023.

When comparing the composition of residents regarding their education, based on the latest population census conducted in the Czech Republic (Sčítaní, 2021), with results obtained in this research, a significant disparity is revealed. Meanwhile, the share of university-educated citizens in Brno is relatively high at 33.6% (Český Statistický Úrad, 2022b), and the share of university-educated participants in PB is almost double at 61%. Therefore, it is possible to pronounce a hypothesis that PB in Brno is aimed at and attracts higher educated segments than marginalised or vulnerable ones.

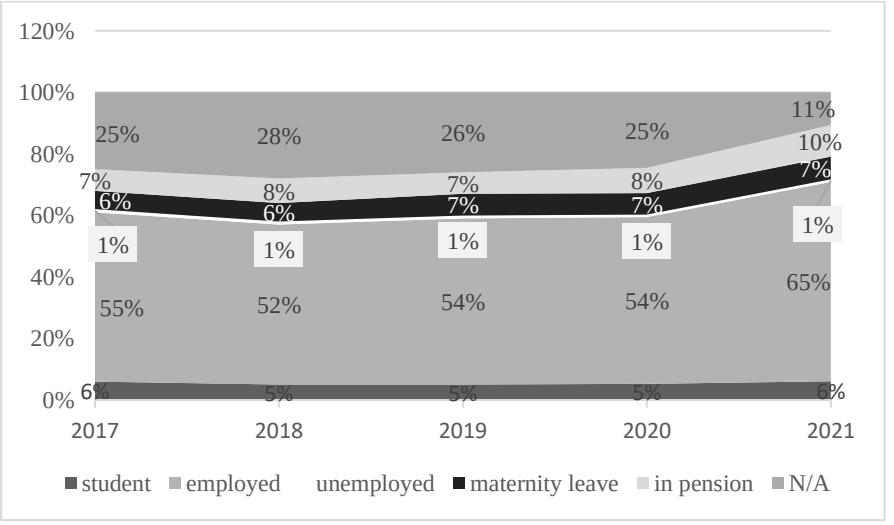
The respondents' economic activity is the information that, until 2021 (when the questionnaire was modified), most of the respondents refused to answer. Even in 2021, when the questionnaire was modified, the share of people refusing to answer this question remained at 11%. The results from the questionnaire held in 2021 indicate that during the previous years, the most secretive participants about their economic activities

were employed, compared to students or unemployed people. While the other categories have approximately the same representation in 2021 as in 2020 and previous years, the share of employed people rose by more than 10%.

From the data presented in Graph 5, we can see that most voters are employed or involved in some active form of economic activity. The unemployed segment forms 1% of the respondents. Nonetheless, Brno is characterised by relatively high unemployment compared to other Czech cities and in the South-Morava region. In 2021, unemployment in Brno was 4.97% (Data.Brno, 2023). Based on this data, it is possible to conclude that PB in Brno is an activity that considers, especially, the ideas of working people. Since employed people are the largest group of participants, their point of view influences the result by the most significant share. The share of students remains basically at the same level from the launch of PB to the present. The same applies to the unemployed, who, in terms of economic activity, form the smallest group that participates in PB. The share of people on parental leave is similar to that of retired people. However, their representation decreased significantly when the questionnaire was changed in 2021 when more precise voter numbers were shown.

**Figure 5:**

% Visualisation of employment status of PB voters (2017-2021)




Source: Authors' own, 2023.

The data in all the categories suggest that the structure of the public involved in PB does not change significantly in the long run. The question, therefore, arises as to whether the cohort of participants changes at all or whether the same people have been participating for several years in a row. This argument may be reinforced by the

observation that the segment of "first voters" and youth diminishes in the long run. That may indicate a low level of education and inclusion of new people.

## 5. Conclusion

The base of participants in PB in Brno (2017-2021) utilised PB as a tool to communicate their priorities to the city. These participants were primarily educated citizens, employed in their productive age. Over 80% of all participants are in their productive age, only 1% are unemployed, and in the last year, 65% were employed. Regarding education, here is the most straightforward difference between the case of PB in Brno and the case of Porto Alegre. Most participants (over 50% each year and over 61% in the last year) had achieved university education. It is possible to generalise that the most represented prototype of a participant in PB Brno is a university-educated, employed person aged 35-45 years old.

When monitored long-term, participants' age distribution, it shows no fundamental changes in the age structures since the start of the PB processes. Even though we have noticed that in the first four years, the proportion of people aged 18 to 30 decreased slightly. From the communication mix, including information boards around the city and community newspapers, channels and radio, it can be deduced that this target group is not being met. The hypothesis also arises regarding the share of first-voters and their education at the time. If this segment is not addressed, in upcoming years, the base of participants will grow older. This hypothesis would need an academical evaluation for the future in the form of research on how many participants are first-voters, and where they learn about PB. Based on these numbers, the first outcomes could be concluded on the effectiveness of the communication mix and information dedicated to educational and explanatory purposes.

When we compare the structure of participants with the original PB case to gain perspective on the difference in PB translation in Brno versus original case. In Porto Alegre, significant differences can be detected compared to the case of PB in Brno. In the original case, 30% of participants came from nuclear families with less than two minimum salaries, meaning the family's income was below the minimal income threshold. A typical participant in Porto Alegre had no formal education or had not completed primary education (Marquetti, 2003). Hence, the participants in Porto Alegre were below the country's average level of education or monthly income.

Research confirms that PB has been adapted and translated to Brno differently than in the primary case of Porto Alegre, which served as a spinoff to many of the theoretical frameworks applied to PB. In this matter, this work hypothesises that other CEE countries might also adopt PB, giving voice to participants with higher education, who are employed and are at a productive age. The recommendation would be to expand this research towards a comparative case study, applying the same methodology

to further CEE cases or beyond the region. Moreover, this explorative quantitative research will be expanded towards a better understanding of participants' and non-participants' attitudes and motivation through qualitative research methods.

Overall, the case of PB in Brno reinforces the hypothesis presented in the de Vries et al. (2022) that PB in the European region does not result in tools causing radical changes to increase spending in favour of marginalized groups; on the contrary, the prototype participant in PB is a university educated, employed person aged 35-45 years old. Those are the segments with the highest voter representation; hence, the mayor's vote is used when selecting the winning projects. Regarding employment, marginalised segments and unstable (when it comes to employment) segments are represented by very low shares, they have rather minimal influence on the results. What might be a barrier for these segments to join the process and whether other big European cities share similarities with Brno within their participation base should be further addressed.

In order address our research question - if implementing PB in CEE attracted a different audience and hence shifted from support of the unheard, marginalised citizens to a different, more widespread support of the participant group, we have analysed how the participatory base developed throughout the four years, from 2017 to 2021.

We are aware of limited scope of this exploratory one-case study research, using a sample of a five-year questionnaire of participants active in PB in Brno to address the research question. For further research, this hypothesis is prepared to be deepened and confirmed using a sample of quantitative data on participations collated from different cases and put them in the comparative perspective or deepened through qualitative research methods.

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# EU Integration Coordination in Georgia: Evolution of the Coordination Model and Contingent Factors

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**Abstract:**

The paper compiles a single case study on the national EU integration coordination in Georgia since 1991 to date. The paper aims to ground Georgia's case in the existing academic literature with a detailed case description and testing of the EU integration coordination mechanisms in Georgia based on theories and models in the PA literature. Georgia's coordination mechanisms are assessed against external incentives, such as 'socialisation' v. 'conditionality' (Schimmelfennig, 2009), and classified in terms of Kassim's (2003) system of national coordination. The paper describes five distinct periods in the evolution of EU integration coordination formats: the first encounter (1991-1999); the silhouettes of coordination (1999-2004); the deliberate coordination (2004-2014); the pragmatic coordination (2014-2022) and the coordination limbo (2022 to date). EU integration coordination structures from 2004 to 2014 are likened to a comprehensive centraliser – with the centre being the driving force of the entire coordination process, with all the issues or thematic areas being depicted in respective planning documents. Since 2014, the country's approach has been compared to that of a selective centraliser, since Georgia shows signs of selectiveness in its ambitions to deliver on a nationally agreed EU policy outcome. The paper finds that, unlike prevalent patterns in EU integration coordination, the relative stagnation of the EU coordination process happens after the accession; in Georgia, this has occurred during the onset of the conditionality stage, which makes this an outlier case. In assessing the

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reasons for the weakening of the process of coordination, this case supports findings that the actor-centric approach is vital to explaining the coordination efforts (Dimitrova & Toshkov, 2007; Fink-Hafner, 2013). The paper concludes that a significant improvement of existing EU integration coordination structures is needed to build a comprehensive approach, reinforced with horizontal coordination and networking, to construct an agreed and inclusive EU integration coordination.

**Keywords:**
coordination models, EU integration coordination, Georgia's EU coordination structures, horizontal coordination, vertical coordination

## 1. Introduction

Due to the cataclysmic geopolitical development - Russia's unprovoked war in Ukraine that broke out in February 2022, the Associated Trio from the Eastern Partnership countries (Georgia, Moldova, Ukraine) scrambled to submit their membership applications to the EU in the following month after the invasion. On June 23, 2022, the European Council granted candidate status to Ukraine and Moldova, while recognising Georgia's "European perspective" and expressing readiness to grant the same status to Georgia once the 12 priorities are met (European Commission, 2022). This anticipated candidacy status effectively moved Georgia closer to the pre-accession countries' basket, where carrots and sticks are clearly defined. It is salient to explore whether the move towards a pre-accession stage has affected the EU coordination mechanism in Georgia from both institutional and theoretical perspectives. The key research questions that the study seeks the answers to are: what internal EU integration coordination model has Georgia established over the last three decades, and how has it evolved? and what have been the key factors determining the quality and process of the coordination of the EU integration process in Georgia?

The evolution of the coordination structures of the EU integration process in Georgia is grouped into four phases assessed against the major factors identified in the literature: what drives the Europeanisation - socialisation or conditionality (Schimmelfennig, 2009, p. 8)? What is the coordination model based on in terms of coordination ambitions and coordination centralisation (Kassim, 2003), and is the EU coordination process depoliticised or politicised in search for gain maximisation by domestic actors (Dimitrova & Toshkov, 2007)? Georgia's single case study shows that the internal (political gain maximisation) and external (socialisation/conditionality) pressures are affecting the choice of coordination models and the effectiveness of coordination, revealing, however, the evidence that the domestic political considerations seem to have a greater effect on coordination efforts.

The research method used is qualitative, primarily expanding existing theories using a new case – the evolution of Georgia's EU integration coordination mechanism.

The paper draws on primary sources - pertinent government decrees, laws, reports as well as thematic academic literature on the case studies of EU integration coordination and theories and models of EU integration coordination. The research is designed as a single case study of the national EU integration coordination in Georgia from 1991 to date. The design choice is justified as the main objective of a case study is to provide a comprehensive description of a new case (Creswell, 1998; Van Evera, 1997, pp. 50-54). Moreover, this single case design is informed by a theory and is considered a more useful approach to a case study in PA research (Garson, 2002). According to Van Evera (1997), process tracing tests theories using observations within cases (p. 56). This article extrapolates expectations from theories using a thick literature review and then tests whether we observe the same outcomes in the case of Georgia. Thus, the research design has three primary purposes: to fill the gap in the literature regarding the case description; extend the relevant EU coordination theories to a new case, and contribute analysis to the practitioners involved in EU integration.

## 2. EU integration coordination: definitions, models and theories

### 2.1 Definitions of coordination

Coordination can be interpreted as a concerted action between different parts of the system to achieve a common goal (Mienkowska-Norkiene, 2014, p. 867). Lindblom and Scharpf refer to negative coordination, which implies the prevention, reduction, or balancing of conflicting decisions by specific agencies; and positive coordination, which focuses more on collaboration between agencies, producing synergistic effects to create better quality services (Peters, 2018). As one aspect of positive coordination, Peters (2018) discusses strategic coordination, which refers to the mutually agreed actions between agencies to fulfil the broad strategic goals of the government. Peters (2018) also emphasises that during coordination, it is vital to involve the lower-ranking structures of the participating organisations in the process and the upper ranks. The above avoids "political conflicts over resources and the interpretation of laws" because it aims to create real services and provide them to users (p. 3).

Wright (1996) defines coordination as a "channel that extends from that within each ministry and inter-ministerial coordination (of both vertical and horizontal nature) at the domestic level to coordinating the domestic-EU interaction and then to coordinating within Brussels" (p. 149). According to Wright, EU policy coordination is complicated due to:

a. the high institutional and procedural density of EU affairs;
b. the high committee volume;
c. the complexity and fluidity of procedures;
d. the lack of control over agenda setting;

e. the weakness or absence of channels of co-ordination in the EU;
f. the dependence on bargaining, networking, and coalition building;
g. the impact of the changing size of the Union;
h. an evolving agenda;
i. and a range of skills and resources and administrative mismatch (Wright 1996 cited in Kassim et al., 2000, pp. 8-10).

Kassim et al. (2000) expect both convergence and distinctiveness in the member states who are interacting within the EU institutional framework (pp. 12-19). According to Dimitrova and Toshkov (2007), regarding EU policy, due to its intergovernmental and supranational nature, coordination arrangements "frame, channel and condition the national input to the European level and the European impact on the national level" (p. 961).

Considering the objectives of the presented research, which examines the coordination of implementing EU integration coordination among the public agencies of Georgia, we define coordination as the centralised management of actions of interdependent agencies and adjustment of coordination through vertical and horizontal arrangements, including hierarchy, networking, and collaboration, to deliver national policy at the EU level and to achieve a declared goal of EU integration.

## 2.2 Coordination challenges in relation to models of public administration

Weberian and the NPM models differ in the degree of integration of public organisations and interinstitutional coordination. The Weberian model, characterised by vertical accountability schemes, implies centralised control as the basis of effective coordination (see Davoudi & Johnson, 2022; Bouckaert et al., 2010; Peters, 2018). In contrast, NPM, with its focus on organisational efficiency, internal goals, and performance, is based on the deconcentration of power, a high degree of independence of individual agencies, horizontal relations and communication, and flexible subordination schemes (Hood, 1991; Rhodes, 1997; Davoudi & Johnson, 2022; Bouckaert et al., 2010).

In the scientific literature, the tendency towards disintegration is considered one of the main disadvantages of the NPM (Osborne 2006, 2010; Lægreid et al., 2014; Christensen, 2012, cit. in Davoudi & Johnson, 2022), as it leads to the separation of public policy and management processes, making vertical coordination increasingly difficult (Baier et al., 1986, cit. Davoudi & Johnson, 2022). Agencies with high autonomy coordinate less with other agencies than those with low autonomy (Bjurstrøm, 2019). Specialisation, one of the important values of the public sector, is considered one of the most undermining factors of coordination (Peters, 2018).

Vertical coordination and integration of public institutions are essential aspects of

organisational and sectoral development and create public value to "bridge public programmes and policies with their implementation" (Davoudi & Johnson, 2022, p. 2). However, despite the clear superiority of the Weberian system over NPM, the central dilemma of coordination is that, in the modern environment, a Centre of Government (CoG) institution consisting of vertical, hierarchical structures must solve problems that are horizontal and complex by nature (Brown et al., 2021; OECD, 2018).

NPM reform has been an accepted way of increasing state efficiency and overcoming bureaucracy in many countries since the 1980s. Even in countries where the Weberian model dominates, the NPM tools are widely used (Dan & Pollitt, 2015). In order to avoid the above-mentioned sectoral disintegration and the narrowing of policy processes in separate fields, it is important to focus on policy integration (Peters, 2018). Thus, bringing the vision of centralisation and integrated policy implementation into the NPM paradigm is unavoidable. Moreover, the complexity of the problems the states face leads to the need for increased interagency coordination and communication. Very little policy remains under the domain of one specific ministry or agency. However, requires joint cooperation between public sector actors, not only of a vertical but also a horizontal nature.

On the other hand, the excessive rigidity of the hierarchical system of the Weberian model and the low level of independence of agencies may promote formalisation and bureaucratisation of the process and prevent them from creating public value. Modern developed states use the crucial tools of coordination introduced through NPM, including networking, horizontal communication, and informal relations (Palmatier et al., 2007, cit. in Davoudi & Johnson, 2022). Without them, coordination processes cannot be effective. OECD recommendations indicate the necessity to develop collaborative leadership skills at facilitating and supporting the activities of ministries and less at command and control. Such a system will contribute to the establishment of horizontal relations and the solution of complex, cross-cutting political tasks (OECD, 2018, p. 43).

In the example of Georgia, we can discuss the effectiveness of coordination processes within the framework of both the Weberian and the NPM models. Practical implementation of the NPM reforms in 2004-2009 brought both positive and negative results. Among the first, the development of public services and e-government, the increase in efficiency and flexibility of public organisations, and the overcoming of administrative corruption should be named. However, simultaneously, it led to the sector's fragmentation at the expense of the development and reformation of individual line ministries, extreme inefficiency of coordinated public policy processes, and high politicisation. In order to respond to the emerging problems, the Public Administration Reform (PAR) started in 2014 within the framework of the Association Agreement with the EU. It introduced the Weberian career of professional public service. However, even under this approach, the effectiveness of the coordinated implementation of public policy remains questionable.

## 2.3 Theories and cases of EU integration coordination

There is still an acute lack of studies that review coordination structures of pre-accession and accession countries, even though the pre-existence of coordination structures is extremely important in their long-term development during accession talks and after the EU membership as well (Dekanozishvili & Kapanadze, 2015; Dimitrova & Toshkov, 2007; Heyen, 1992). Therefore, although the current article concerns Georgia's coordination of EU integration, the literature is reviewed on the pre-accession and post-accession coordination processes.

Christensen et al. (2016) have employed two theoretical approaches to explore what determines a specific coordination choice. A structural-instrumental perspective emphasises that a choice of structure of public administration can affect the quality of coordination while choice depends on administrative executives' perceptions. According to the cultural perspective, informal values and norms rooted in the historical institutional traditions of political-administrative systems influence decision-making (Selznick, 1957, cited in Christensen et al., 2016, p. 319). According to this view, public sector ethos, public values, and trust determine how bureaucracy acts and thinks. Different administrative traditions or cultures represent filters producing different coordinating patterns in different contexts (Christensen et al., 2016, p. 319). Such explanatory variables as norms, identities, 'logic of appropriateness', and 'path-dependency' (March & Olsen, 1989; Krasner, 1988 cited in Christensen et al., 2016, p. 319) are at work. Therefore, from this perspective, specific organisational values lead to specific choices of coordination mechanisms. Gärtner et al. (2011, p. 79) suggest that historical institutionalism and a focus on resources might be the best approach to studying why the diversity in coordination models is prevalent.

According to the widespread notion in the literature, once a country moves into the stage of a conditionality-based framework of interaction with the EU due to pressure to comply with acquis requirements, it either transforms existing coordination structures or creates new ones (Dekanozishvili & Kapanadze, 2015; Dimitrova & Toshkov, 2007). Kassim et al. (2000, p. 15) suggest that coordination of EU policy at the national level depends upon the political opportunity structure within the country. Dimitrova and Toshkov (2007) argue for a similar actor-centric approach: administrative change most often follows the formation of a new government as "actors benefit from one organisational configuration more than from another, and as a result, they try to achieve the more beneficial institutional arrangement." (p. 977). External conditions (less conditionality v. more or vice versa) provide an opportunity for politicians, especially the new governments or new coalitions; however, change is constrained by historical and institutional legacies, but the core causal logic that explains variation across CEE is gain maximisation by governments.

In their study of 16 central and eastern European countries' coordination systems, Dekanozishvili and Kapanadze (2015) have singled out indirect coercive institutional isomorphism as the most salient factor causing transformation or formation of coordination structures due to "formal and informal pressures exerted on organisations

by other organisations upon which they are dependent" (DiMaggio & Powell, 1983; Dekanozishvili & Kapanadze, 2015, p. 65).

In her single-case study on Slovenia, Fink-Hafner (2013) posits that in the case of post-communist countries, four factors influence national systems of coordination regarding EU policies: 1) functional pressures from the EU; 2) the evolving national party system; 3) existing politico-administrative traditions and 4) informal decision-making between the EU and Governments during a global crisis (so-called "informal intergovernmentalism"). The study finds that in Slovenia, "politicisation of EU business due to national and EU-level factors" occurred in the post-accession period. Fink-Hafner (2013, p. 39) defines „politicisation" as "the emergence of differences in the EU, expressed through party competition over policy content, the domestic management of EU policy, and the role of senior officials in EU processes". According to Fink-Hafner (2013), all four identified factors have brought about the politicisation of EU matters in post-communist countries.

In a classic study, Kassim (2003) has developed a four-pronged system of national coordination based on two dimensions: coordination ambitions and coordination centralisation. Hence, there are four coordination types: comprehensive centralisers; comprehensive decentralised; selective centralisers; and selective decentralised. Coordination ambition is related to member states' desire, whether they wish to construct an agreed national position on the full range of EU policies or contrary, they have only selective ambition focusing on some policy issues. Regarding centralised systems, all national representatives present coherent positions, and EU affairs are conducted at CoG, with overall coordination and dispute settlement powers. In decentralised structures, there is no single authoritative actor. EU affairs are conducted by respective ministries and or subnational governance structures that enjoy a veto or cannot be easily bypassed by the centre (Kassim, 2003, pp. 90-91).

According to conventional knowledge, the higher the leadership level, the more coordination authority. Network coordination is either an alternative or a supplement to the hierarchical mechanism. It implies the interaction and interdependencies between government and non-governmental actors, government and civil servants, and cross-sectoral cooperation (Christensen et al., 2016, p. 318). Based on the study of six countries, Christensen et al. (2016) found that no single principle of organisation dominates the crisis management area. Regarding causal assumptions, the quantitative study found that the cultural dimension (path-dependency and administrative culture) influences perceptions of coordination quality more profoundly than structural features (p. 328) and that hybrid systems are more prevalent in times of crisis, provided that a good enough culture of coordination is present (p. 330).

According to the Fink-Hafner study (2013), although during the accession process, EU external scrutiny conditioned modernisation, including in public administration, the post-communist culture of subjecting every policy area to politics has persisted and produced variations in the process of coordination efforts on EU matters as the external pressure was lessened post-accession. Change in the national

party system from a multi-polar to a bipolar structure has also led to the politicisation of at least certain aspects of EU policies (Fink-Hafner, 2013).

Gärtner et al. (2011) adopted the Kassim model to check the state of coordination in the new EU member states that joined in 2004 and 2007 and added the 12 new members to the existing 13 countries, giving us the most comprehensive overview of the national coordination systems to date:

1) Poland, Lithuania, and Latvia are comprehensive centralisers, along with some old member states - France, the UK, Sweden and Denmark.
2) Slovenia, Hungary, Czech Republic, and Slovakia are comprehensive decentralisers from the new states, along with Italy, the Netherlands, Austria, Germany and Belgium.
3) Malta is the single selective centraliser, along with old member states: Portugal, Spain and Ireland.
4) Estonia, Bulgaria, Romania and Cyprus are selective decentralisers.

Research shows that there is no dominant coordination model. Systems are less centralised than expected, administrative structures conduct the brunt of the work. There is no observable distinction between the new and old Member States, except that four new Member States fill the previously blank selective decentralisers category, an outcome that the authors explain due to limited resources forcing a selective approach (Gärtner et al., 2011, pp. 94-96).

The abundance and or scarcity of resources is also deemed central to effective coordination efforts in other studies (Kassim et al., 2000; Wright, 1996; Panke, 2010). According to a study of domestic coordination of EU policies in 19 smaller EU member states, achieving good negotiation outcomes is exacerbated for small states due to the lack of resources (Panke 2010). Effective coordination happens when three factors are at play "good cooperation between Permanent Representations and the lead ministries, autonomous lead ministries that prioritise EU work and good inter-ministerial conflict resolution systems" (Panke, 2010, p.770).

Many authors support the same thesis that in post-communist countries, depoliticisation of the civil service due to external EU scrutiny during the pre-accession and accession period was partial, while the EU coordination systems were downgraded and politicised after attaining full membership (Verheijen, 2007; Dimitrova & Toshkov, 2007; Beblavy, 2009; Batory, 2012). Meyer-Sahling has found that change of power between governing parties that are polar opposites also affects the general level of politicisation of public administration. That effect is due to the communist past rather than the prevailing modes of politicisation found in Western democracies (2008).

## 3. Analytical framework

To answer which internal EU integration coordination model has Georgia established

over the last three decades and how it evolved, the study below provides a detailed case description starting from Georgia's first encounter with the EU to date, denoted with such cooperation agreements as the Partnership and Cooperation Agreement (PCA), the European Neighbourhood Policy (ENP), the Association Agreement (AA) and finally the European perspective and the anticipated candidacy. Regarding factors affecting coordination ambitions, the reviewed literature identified two key factors determining the quality and process of the coordination of the EU integration – socialisation, as a more internally driven stimulus or conditionality, and as a more externally driven stimulus (Schimmelfennig, 2009, p. 8). The study adopts the socialisation and/or conditionality character of relations generally associated with these historical formats as one of the frameworks, against which the coordination efforts are studied.

To determine the quality of coordination, the authors analyse key documents (strategies, action plans) that outline coordinated efforts and instruments, as well as the forms of activities and commitments of different agencies to achieve a common goal. The documents officially manifest the government's intended planning, implementation, monitoring, and reporting actions for the EU integration coordination process. The case also describes coordination structures –inter-ministerial and intra-ministerial mechanisms that set the formal and informal rules for information exchange, giving assignments, and decision-making on the matters of the EU integration coordination process. Power relationships and a position in the decision-making chain hierarchy significantly affect the coordination process's effectiveness. Therefore, the study involves pertinent regulations and official documents (decrees, orders, ordinances, agreements, and the like) that govern the coordination processes. Analysing their evolution and change against the backdrop of changing cooperation formats with the EU will provide findings informing the research questions.

To further distinguish stages with discernible characteristics in the historical evolution of EU policy coordination mechanisms in Georgia, based on the literature review above, the analysis will adopt Kassim's (2003) four-pronged system of national coordination based on two dimensions: coordination ambition and coordination centralisation. In each period, the governments' coordination ambition will be identified against the background of historical facts (whether the government devoted full attention to EU policies or selectively focused on some policy issues). It will assign qualifications for each period based on the model.

Thus, the analysis will focus on the interplay of the external and internal incentive structure against the backdrop of the historical evolution of the coordination mechanism in Georgia. Furthermore, since the debate on the influence of external-internal incentives is divergent in the literature, the analysis will dwell on which side of the argument is strengthened by this case. According to the literature review above, some authors find that high external stakes are the best stimuli for intensification of the Europeanisation efforts, thus having the most effective coordination mechanism. In contrast, others argue that the political opportunity structure within the country and

the calculations of political gain maximisers weigh in more heavily in determining the coordination ambition, not the level of external incentives. The interplay of internal and external stimuli and the existing level of ambition and centralisation will be summarised into a table to reveal the full nature of the case study based on the authors' chosen analytical framework.

## 4. Evolution of Georgia's EU integration coordination

### 4.1 First encounter (1991-1999)

Georgia has established a cooperation framework with the European Community (EC) from the outset of its independence. At that time, this cooperation primarily included financial and humanitarian assistance that Georgia's struggling socio-economic situation required. Moreover, after the dissolution of the Soviet Union, the EC did not have any political, social, or economic vision toward the former Soviet constituents. It was only in 1991 that the EC speedily designed and started implementing the Technical Assistance Programme to the Commonwealth of Independent States (TACIS). The Programme had a generalised approach to the 12 participant countries[4] with the overall objective to "help individual states to develop effectively functioning market economies based on private ownership and initiative, and to encourage the development of pluralistic democratic societies" (European Commission, 1992). There have been other EU support programmes as well. Notably, humanitarian assistance has accounted for € 160 million and has, in particular, helped combat very serious humanitarian situations in the mid-90s. During the 1992-2004 TACIS programme, national allocations represented more than € 110 million and the Food Security Programme has disbursed over € 70 million (European Commission, 2005). Such technical support required systematised coordination efforts from the government, thus contributing to forming an early ad hoc coordination process with the EC.

### 4.2 Silhouettes of coordination (1999-2004)

In 1996 the European Union and Georgia signed the Partnership and Cooperation Agreement (PCA), primarily providing technical assistance in governance and economic and social development. The Agreement came into force in 1999. The objectives of the PCA were to establish a framework for political dialogue between the Parties and a basis for legislative, economic, social, financial, civil scientific, technological, and cultural cooperation to consolidate Georgia's democracy and develop its economy to complete the transition into a market economy (Partnership and Cooperation Agreement, 1999).

The PCA also established a Cooperation Council tasked to supervise implementing this Agreement. The Council was supposed to meet at the ministerial

4 Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. Mongolia, not a member of the Soviet Union, was also included in the TACIS programme.

level at least once yearly (Article 81). The Council included members of the Council of the European Union and of the Commission, while from Georgia's side, the members of the Government of Georgia were to participate in the meetings (Article 82).

The above, presumably, pushed the Government of Georgia to establish the first-ever horizontal coordination mechanism on EU affairs. Almost a year later, on 27 July 2000, the President of Georgia established a "Government Commission to Support Georgia-EU Partnership and Cooperation" and introduced its Rules of Procedure. Initially, this Commission had eight members, of which three were not even members of the Government of Georgia, and half represented the Ministry of Foreign Affairs. The Minister of Foreign Affairs chaired it, and 5 out of 18 ministers at that time were members of the Commission. The President (chair of the Government) did not participate in the meetings (President of Georgia, 2000).

In addition, another parallel coordination mechanism was established in 2001 - "Coordination Council for Cooperation with the EU". The mechanism was intended as a higher-level coordinating body, with the President acting as its chair. The council had 18 members (both political and civil servants), and the main objective was to support the country in the process of its "approximation with the EU", which was set as "one of the main foreign policy priorities" of Georgia. Out of 18 members, 10 were from the Government (President of Georgia, 2001).

### 4.3 Deliberate coordination (2004-2014)

The change in the political leadership of Georgia in 2003, with a strong vision and ambition to pursue the country's Europeanisation process, was a strong impetus for the Europeanisation and, thus, advancement of the EU affairs coordination structures within the Government.

In 2004, after the adoption of a new Law on Structure, Powers, and Rules of the Government of Georgia (Parliament of Georgia, 2004), the President introduced a new position of "State Minister in European Integration Affairs" (President of Georgia, 2004). On December 31, 2004, the Government established an Office of the State Minister of Georgia on European and Euro-Atlantic Integration (OSMEEAI) (Government of Georgia, 2004). The State Minister was charged with coordinating the European and Euro-Atlantic Integration process. The State Minister also served as the Vice Prime Minister of the cabinet, which increased OSMEEAI's political significance and visibility in the governing structures. The above was quite a unique and unparalleled decision since, at that time, Georgia did not have a European perspective. Unlike Moldova and Ukraine, Georgia did not have any provisions for free trade in the PCA. Thus, the EU did not consider the possibility of signing an association agreement with Georgia at that time (Gogolashvili, 2017, p. 7).

OSMEEAI had wide-ranging functions in Georgia's EU integration process, often substantially overlapping with the MFA. Some of the key functions included:

a) Coordination of the development and implementation of the strategic action plan of the Government of Georgia, its implementation and monitoring;
b) Cooperation with the EU institutions (European Commission, European Council, European Parliament, and the like);
c) Providing regular and direct contact with the European Union and NATO missions to Georgia, and cooperation with Georgian embassies in EU and NATO member and candidate states to promptly exchange analytical and current information.

In addition, the same year, the Government of Georgia established a new political-level coordination mechanism – "Georgia's EU Integration Governmental Commission" (Government of Georgia, 2004). The Commission replaced the abovementioned two coordination mechanisms – "Government Commission to Support Georgia-EU Partnership and Cooperation" from 2000 and "Coordination Council for Cooperation with the EU" from 2001. Two major changes underpinned the creation of the new EU Integration Commission. One was related to the composition – almost all ministers from the Cabinet, except for the Minister of Defence and the Minister of IDPs and Resettlement became members of the Commission. The Prime minister became the chair, while the Minister of Foreign Affairs and the State Minister for EU integration acted as deputy chairs of the Commission. Another one concerned function – the commission was charged "to coordinate work of different state agencies to facilitate the EU integration process". However, most importantly, it was tasked to support the Georgian legislation harmonisation process with the EU acquis.

In 2006, after the inclusion of Georgia in the European Neighboured Programme (ENP), the Georgia-EU Council adopted a 5-year ENP Action Plan, which had eight priority areas and included hundreds of concrete actions to be implemented jointly (EU-Georgia Cooperation Council, 2006). In addition, OSMEEAI, in cooperation with the relevant ministries and governmental agencies, started developing annual Action Plans for implementing the ENP in the Logical Framework Matrix that provided specific measures to achieve the priorities of the Action Plan. Overall, the implementation of the plan and reforms were positively assessed by the EU (European Commission, 2014). In addition, during 2004-2014, Georgia was also included in the Eastern Partnership Programme. Georgia also concluded the Readmission Agreement through these coordination mechanisms and launched negotiations on the Association Agreement and Visa Liberalisation Action Plan (VLAP).

Such achievements in the EU integration agenda could not have been achieved without proper analytical, administrative, and technical support, most notably without an effective horizontal coordination mechanism. Alongside overarching structures, the Government would periodically create working groups or ad hoc Commissions that reinforced the specific EU integration agenda and provided for reinforced horizontal coordination as a supplement to the existing hierarchical coordination via networking and collaboration on the PCA, the ENP, and the DCFTA (Government Decree # 93,

1994 cit. in Kapanadze, 2015, p. 114; Government Decree #112, 2005; Government Decree #195, 2005; Government Decree #78, 2009). All of the ad hoc structures successfully completed the given tasks: the PCA, the ENP, and the DCFTA agreements had been concluded, and their implementation was either completed or is ongoing (i.e. in the case of DCFTA).

### 4.4 Pragmatic coordination (2014-2022)

Significant shifts were made in the coordination structures in 2014 as the three Eastern Partnership countries - Georgia, Moldova, and Ukraine signed the Association Agreements (AA) including the Deep and Comprehensive Free Trade Agreement (DCFTA). These Agreements represented a significant step forward for Georgia in its EU integration process.

From the coordination perspective, it is essential to mention that although there was a peaceful turnover of power in Georgia in 2012 from one ruling party to another, the new government did not make any significant changes to the existing EU integration coordination mechanism, while drastic changes in other areas were observed. The only shift was the demotion of the State Minister for OSMEEAI to a regular cabinet member, removing the title of Vice Prime Minister. This decision was primarily associated with the distribution of the portfolios among the coalition government parties and their functional roles. However, the decision was criticised because an Office with no "extraordinary political status or leverage mechanism" would be unable to negotiate position and lead the reforms' implementation process (Khoshtaria, 2015, p. 118).

In 2014, the Government of Georgia issued a special decree outlining special measures (preparation and division of labour) to sign the AA and adopt the Association Agenda (Government of Georgia, 2014). In particular, at the highest political level, the EU Integration Commission had to ensure overall guidance of the process, while at the technical, level three coordinators were designated:

1. OSMEEAI was charged with developing a policy for the AA implementation, coordination, and monitoring within the government and elaborating annual and bi-annual plans and annual implementation reports through coordination with all the ministries involved. However, another novelty was that the Office was tasked with engaging civil society in the process.
2. The Ministry of Foreign Affairs was to coordinate and lead the negotiation processes with the EU.
3. The Ministry of Economy and Sustainable Development (MoESD) - a third and a new central player in the EU integration affairs, was tasked with leading overall coordination and monitoring of implementing the DCFTA through the elaboration of the DCFTA part of the annual Action Plans and Reports.

Other line ministries were tasked with working with the abovementioned agencies in their respective areas. A year later, in 2015, a new decree was issued calling on the line

ministries to designate and strengthen the structural units dealing with the EU integration affairs within their institutions. Moreover, they had to appoint deputy ministers responsible for the process internally.

Creating ad hoc formats for reinforcing specific EU integration tasks, hence, reinforcing the existing vertical coordination with horizontal coordination efforts also continued in this period. One significant ad hoc arrangement was creating a "working group for dialogue between Georgia and the European Union for further liberalisation of the visa regime" (Government Decree # 2365, 2014). The Deputy Minister of Foreign Affairs headed the working group, and the group reported to the EU Integration Commission. It was tasked with taking appropriate measures in coordination with the government commission on migration issues, developing Georgia's position, and conduct a dialogue on introducing a visa-free regime with the EU. The process was successfully concluded in 2017, and Georgia received a visa-free status with the EU.

In 2016, the Government of Georgia replaced the statute of the EU-Integration Commission adopted back in 2004 (Government of Georgia, 2016). The new document added two new important functions to the Commission's scope: supporting the legislative approximation process (the previous version focused only on harmonisation); and developing a long-term strategic communications policy to raise societal awareness of the EU integration process.

A significant shift in the EU affairs coordination structure was the merger of OSMEEAI with the MFA in 2017, which was part of the Government restructuring process, when the number of ministries decreased from 16 to 13, and the position of the State Minister on European and Euro-Atlantic Integration was abolished. The changes were justified by the "optimisation of the government" structures, and it was alleged that this move had no political context regarding the importance of the EU integration process. However, in practice, the perception emerged that the coordination system may have suffered from this change, considering the importance of the political level leadership in centralised governance systems, such as Georgia. The State Minister had political authority and ensured higher legitimacy to the EU integration process (Kapanadze, 2015, p. 109).

Despite this change, since 2018, under the leadership of the MFA and MoESD, the EU integration coordination systems have been further reinforced. In particular, electronic planning and monitoring systems were launched, and limited guidelines for the line ministries became available.5 In addition, there were attempts to establish administrative-level coordination mechanisms under the Commission. However, this has yet to gain the recommended functionality (OECD/SIGMA, 2018).

5 For the Association Agreement – www.aa-monitoring.ge For the Deep and Comprehensive Free Trade Agreement – www.dcfta.gov.ge

### 4.5 Candidacy limbo (2022)

As Georgia received a membership questionnaire from the EU on April 11, 2022, the government coordination system faced heightened pressure to prepare a national response with a favourable outcome at the EU level. The impromptu EU Integration Commission sitting was convened on 15 April 2022 to coordinate the Questionnaire Response Preparation process. The MFA was tasked with coordinating the process at the technical level, and informal "special working groups" were formed to document the response. On May 2 2022,responses for the first part (political) were submitted to the EU by the Government of Georgia. On May 62022, another EU Integration Commission sitting was held to finalise the second part of the questionnaire.

Judging by the urgency and the speed, the existing coordination systems proved their capacity to deliver on the emerging new tasks. However, the outcome of the process did not result in being granted the status. While there is no direct evidence to attribute the outcome to the lack of an effective coordination system, there is a body of evidence that could ascribe this shortcoming to ongoing and increasing politicisation (as defined by Fink-Hafner, 2013) of the EU integration coordination as well as selective approach to realisation of EU integration policies, to be analysed below.

## 5. Quality of the coordination

Two key elements determine the quality of coordination in public administration: the effectiveness of existing coordination instruments and individual ministerial structures in the EU coordination process.

### 5.1 Coordination instruments

Until the candidate status is granted, the AA remains the key framework for the EU - Georgia cooperation. Therefore, in parallel with the 12 conditions, the state agencies are implementing activities as identified in relevant planning documents such as the Association Agenda. The document aims to facilitate implementing AA by creating a practical framework through which the overriding objectives of political association and economic integration can be realised (EU-Georgia Association Agenda, 2014).

Going into a more operational level, the principal coordination instrument for the Government of Georgia is the National Action Plan for Implementation of the Association Agreement (NAPIAA). The Action Plan includes short-term activities organised per the AA or the Association Agenda articles. The plan's template also covers the activities' results and output indicators that need to be filled in, as well as responsible agencies. However, based on the analysis of the previous three action plans, the following quality-related challenges can be identified (NAPIAA 2021, 2022, 2023): 1) lack of reform-oriented activities, 2) repetitive activities from the previous years, 3) lack of results-based planning and 4) inexistence of the budget.

DCFTA Annual Action Plans are also developed (part of the NAPIAA). These

action plans also suffer from the same quality challenges described above, except for the identified budgets for most activities. In addition, DCFTA plans have goals and objectives identified but do not have any result indicators (Annual DCFTA Plan 2021, 2022, 2023).

In 2018, OECD/SIGMA assessed Georgia's EU integration coordination mechanism against the European Principles of Public Administration. Three principles out of 12 in Policy Development and Coordination set the standards for the EU Integration framework. The result of the assessment of Georgia's framework was relatively low – 10 out of 16 on "clear horizontal procedures", 5 out of 16 on "A harmonised medium-term planning system" and 4 out of 17 on "systematic and timely transposition of the European Union acquis" (OECD/SIGMA, 2018).

The analysis found challenges in aligning NAPIAA with the central planning documents. Civil servants' capacity at the centre and in line ministries involved in EU Integration affairs still requires further development. SIGMA made several recommendations for further advancement of the EU coordination structures (OECD/SIGMA, 2018). However, a review of the implementation of the recommendation in 2021 by the agency showed that most of the recommendations had not been fully implemented, though a certain degree of progress was observed.

## 5.2 Coordination structures within state agencies

Currently, 14 state agencies are part of the EU Integration Commission, out of which 13 are members of the Cabinet, underlining the high political decision-making and the whole-of-government nature of the supreme coordination mechanism. Out of 14, 10 agencies have a specially dedicated unit dealing with the EU integration process (either at the 1st level or 2nd level). Out of these 10, none of them have a minister directly responsible for the unit, and only two are subordinated to the first deputy minister. In the rest of the cases, deputy ministers ensure oversight of these units.

Surprisingly, the key CoG – the Administration of the Government of Georgia – does not have any structural unit that deals with EU integration. Neither its statute identifies such function in the list. Currently, it can be considered that at the working level, the MFA is the central coordinating body of the EU integration process in Georgia. Since the merger in 2017, the MFA introduced the Directorate General (DG) for the EU Integration in its structure. Currently, the DG has two structural units: (1) the EU Assistance Coordination and Sectoral Integration Department and (2) the European Integration Department. A third structural unit in the MFA – the Department of Europe, is also responsible for bilateral relations with European countries (Statute of the Ministry of Foreign Affairs, 2005).

Although the EU Integration coordination structures under the MFA seem complex and, to some degree, duplicative, its main weakness lies in the need for more power to force the processes. The DG is not directly subordinated to the minister, or even to the first deputy minister. In practice, this may impede the DG and its structural

units from effectively coordinating the EU integration process horizontally across the government. In addition, the Minister of Foreign Affairs is not a vice PM, as once was the case right after the merger. Moreover, according to the European Principles of Public Administration, the CoG shall be reviewing all government draft legislative acts to ensure conformity with the EU acquis, which the MFA needs to do. The ministry staff, traditionally staffed with diplomats, lack expertise in the sectoral reforms that the EU integration process entails. Although a high level of each sector-specific proficiency is optional, some degree of relevant knowledge and skills is important for effective and quality coordination. The MFA does not have a relevant profile.

The Ministry of Finance, one of the key CoG institutions in Georgia, has a substantially low profile in the process. A secondary structural unit within the ministry – the European Integration and Programmes Service – is established under the Public Debt Management Department. However, neither the statute nor functional description provides information on how these two are related and how the Ministry discharges its supposedly key function in European integration.

The Ministry of Justice – yet another CoG – also has a dedicated unit (EU Law Department) responsible for analysing the compliance of Georgian legislation with EU law sources (regulations, directives, decisions), if necessary, amending or drafting normative acts, as well as a legal examination of draft normative acts developed by various agencies in order to approximate/harmonise the Georgian legislation with the EU regulations (Government of Georgia, 2013). However, the SIGMA study found that their opinions are issued inconsistently (OECD/SIGMA, 2018, p. 11).

## 6. Analysis of the EU integration coordination process in Georgia

The case study reveals that Georgia's EU integration coordination structure and the quality of coordination have been evolving vis a vis the interplay of internal and external factors. After gaining independence, Georgia's EU integration coordination structure was nascent. Despite significant contributions to the EU's stabilisation efforts (namely the TACIS Programme), these did not translate into forming a coordination structure in Georgia then. Although the Programme's design required horizontal coordination across the government agencies (given that priority areas were intersectoral), in Georgia, the Ministry of Foreign Affairs was the main interlocutor for implementing the Programme activities, and no systematised coordination mechanisms emerged. Thus, until 1999, Georgia's first encounter with the EC/EU was based on socialisation with select areas marked for cooperation.

During 1999-2004, an emerged silhouette of coordination served as an initial step for introducing the horizontal coordination mechanisms for EU integration across the government of Georgia. Nevertheless, in practical terms, it did not bring significant outcomes regarding EU integration. The PCA and the relevant structures significantly

raised EU-Georgia relations to higher levels. However, significant Europeanisation or the sectoral integration of the country could not yet be observed (Gogolashvili, 2017, p. 8). The PCA fostered comprehensiveness of EU integration cooperation; however, relations still denoted by socialisation and politicisation needed to be higher as no conditionality was involved. Although some coordination mechanisms emerged in the year 2000, these did not entail the formalisation of significant coordinating structures within the government.

Since 2004, the election of a Euro-enthusiastic government pushed Georgia toward more deliberate coordination. Establishing a special ministerial agency dedicated to the EU integration gave a strong impetus for developing the coordination mechanism. It equipped it with high political legitimacy, leading to the development of respective capacities of the staff and networks. The above represented a major upgrade to the existing vertical and horizontal EU policy coordination structures within the government of Georgia. The strong political will (internal drive) and change in the EU's interests towards the region (external drive) contributed to such a dramatic shift. In particular, in 2003 the EU adopted its first European Security Strategy, emphasising the importance of stability in the region and that the EU should "take a stronger and more active interest in the problems of the Southern Caucasus, which will in due course also be a neighbouring region" (Council of the European Union, 2003, p. 10). In addition, completing the most extensive enlargement cycle in 2004 (10 new members from Central and Eastern Europe) created incentives for other aspirant countries' governments to further their own integration processes. Such efforts have resulted in tangible outcomes for Georgia: the design of the ENP and the country's inclusion in it (Rinnert 2011, p. 6). The ENP, for its part, rested on the two key principles of cooperation between the EU and partner countries: joint ownership and differentiation. It has also established a conditionality approach - the EU would support the partner countries by offering rewards or incentives based on progress in priority areas, requiring establishing effective coordination mechanisms, which has finally operationalised the PCA through robust monitoring, reporting, and review by existing coordination mechanisms (European Commission, 2004). Thus, Georgia's EU integration mechanism was strengthened in response to the conditionality requirement of a more robust cooperation. Notably, during this period Georgia's public management model was implicit, without any legal codification, of the NPM character, resulting in some positive effects on the EU coordination system, as the CoG approach was aimed at efficiency and goal-oriented performance, resulting in not only the vertical coordination structures but also the horizontal approach, reinforced by networking and collaboration via the creation of goal-oriented ad hoc supplementary structures.

In 2014, the AA and DCFTA promised the country significant economic and political benefits, which would only be achieved with an effective coordination mechanism. Nevertheless, the abolition of the OSMEEAI in 2017 impacted on the EU integration mechanism and the processes, with the quality of coordination being challenged while the rest of the parameters remained the same. This period was marked

by a stronger conditionality as much as the AA, Visa Liberalisation, and direct budgetary support from the EU required a more solid coordination mechanism. However, unlike in the previous phase, the internal drive was weakened after the 2020 elections as EU policy implementation regarding Copenhagen criteria was interpreted by the ruling political party as uninvited power-sharing recipes that could lead to a higher and more democratic redistribution of political power.

In 2022, especially after the presentation of the 12 priorities as a precondition for gaining the candidate status, the introduction of the partisan approach left Georgia's more or less functioning EU integration coordination system in a state of limbo – the implementation process of the 12 conditions has sidestepped nearly all the existing EU integration coordination mechanisms. The ruling party, purportedly through the Parliament of Georgia, took over the process. Moreover, it was the chairperson of the "Georgian Dream" (GD), not the Speaker of the Parliament, who delivered a press briefing from the party office on 1 July 2022 and presented the action plan on how they intended to meet the 12 priorities outlined in the European Commission's opinion (Political Party "Georgian Dream", 2022).

This decision was primarily justified based on the political nature of the 12 priorities, and thus, Parliament's legislative role was deemed paramount. However, most of the priorities could still be coordinated through existing EU integration coordination structures, with increased participation of the Parliament, especially considering that most of the agenda items were part of the AA. Furthermore, considering the complexity of the intended reforms, the involvement of all branches of Trias Politica and civil society was significant not only in principle but also in practical terms, as inclusiveness was point number 10 in the 12 EU conditions. Such an approach has led to weak implementation of the 12 priorities (State of Implementation of 12 Priorities, 2023).

According to the internal political discourse by the ruling party - GD, these preconditions became interpreted as recipes for losing the existing dominant distribution of political power, giving birth to perceptions that the clash between the government's power centralisation domestic agenda and the country's external, foreign policy agenda is imminent. The emergence of party competition over the EU policy content has been brewing since the 2020 elections and became most acute in 2021, denoted by such instances as the non-fulfilment of the April 2021 agreement brokered by Charles Michel, the President of the European Council as well as weak implementation of the 12 conditions and perceptions of backsliding of democracy in Georgia (Brzozowski, 2023). This clash has led to the over-politicisation of the EU integration agenda and, thus, contributed to the weakening of effective coordination, paradoxically at a time when Georgia is on the threshold of becoming an accession country (Giuashvili, 2023). Although preparations for the membership process require an even more robust and more effective coordinating system, no single meaningful change or update has been observed in the country's EU integration coordination system since Georgia applied for EU membership in March 2022.

Sidestepping a well-established coordination mechanism and transferring the pulpit to the ruling party limited the opportunity to advance the institutional framework to the next level. Extreme politicisation also conditioned a more selective nature of the coordination. The frequency of the EU Integration Commission sessions held in this period indicates the weakening of political will and selective centralisation. For instance, during the 2004-2014 period, 51 Commission sessions were held, while from 2015 to May 2023 – at a time when coordination should ideally have accelerated considering the AA/DCFTA, visa-free, and later the membership application – there were only 15 sessions, showing the selective approach to the EU coordination from the CoG.

**Table 1:**

Summary of the key aspects of the EU integration coordination process in Georgia

| *Stages of Coordination* | *Coordination Lead Agency* | *Socialisation/ Conditionality* | *Comprehensive/ Selective* | *Centralised/ Decentralised* |
|---|---|---|---|---|
| **First encounter (1991-1999)** | Ministry of Foreign Affairs | Socialisation | Selective | Centralised |
| **Silhouettes of coordination (1999-2004)** | Ministry of Foreign Affairs | Socialisation | Comprehensive | Centralised |
| **Deliberate coordination (2004-2014)** | OSMEEAI | Weak Conditionality | Comprehensive | Centralised |
| **Pragmatic coordination (2014-2022)** | OMSEEAI (2014-2017) Ministry of Foreign Affairs (2018-2022) | Conditionality | Selective | Centralised |
| **Candidacy limbo (2022-)** | Ministry of Foreign Affairs | Conditionality | Selective | Centralised |

Source: Authors' own, 2023.

## 7. Conclusion

The single case of evolution of Georgia's EU integration coordination mechanism revealed that in Georgia, the structure has been primarily following the Weberian model – with a strict hierarchy and delegated functionalities to the line ministries and agencies. In primarily Weberian public administrations, prevalent in most eastern European countries, including Georgia, the coordination mechanisms are assigned to the CoG institutions, as is the case in Georgia. Although this is crucial for effective coordination, a streamlined horizontal approach is needed for a better alignment of planning and financial resources, oriented towards achieving stated objectives in a harmonious and timely manner. The paper shows that Georgia has also developed horizontal coordination structures along with the CoG approach.

Regarding centralisation and effectiveness of coordination, the studies discussed above have consistently shown that change in the coordination model towards strengthening effectiveness is prevalent during the accession period. The weakening and politicisation of coordination usually occur after the membership has been accomplished. Regarding Kassim's model, from 1991 to 2014 Georgia's EU integration coordination is that of a comprehensive centraliser – with the centre being responsible and a driving force for the entire coordination process and all the issues/thematic areas being depicted in respective planning documents. Since 2014 and especially after 2022, the coordination approach resembled that of a selective centraliser, revealing that the case of Georgia is a deviation from the dominant academic findings, as the politicisation of the coordination structures started before the accession talks, while this primarily happens after countries achieve membership of the European Union (Verheijen, 2007; Dimitrova & Toshkov, 2007; Beblavy, 2009; Batory, 2012; Fink-Hafner, 2013). Hence, the single case study in this regard supports Dimitrova and Toshkov's (2007) and Fink-Hafner's (2013) findings that the actor-centric approach is the key causal factor in explaining the coordination efforts together with other factors. This case points to the need to research further the interconnection and precedence of internal over external factors in the EU integration coordination. Further studies may reveal those variables at the domestic level that take precedence over external factors and condition different outcomes in terms of the effectiveness of domestic coordination of EU integration policies before and during the accession talks.

Once Georgia is granted the candidate status, a significant improvement of existing coordination structures in terms of CoG ambition to construct an agreed and inclusive national position instead of the current selective ambition will be necessary. There is a need for clear political support from the central coordinating body to realise the goal of EU integration if the country is to continue with a comprehensive centralised model of EU integration. Such an approach demands that the national EU integration coordination system is better informed and positioned to collect, streamline, analyse, and use information from different sectors to deliver a response at the EU level commensurate with the declared national goal of the EU accession for Georgia.

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# Assessing Individuals' Perceptions of the Impact of Corruption on the Domains of Sustainable Development: A Cross-sectional Study in Palestine

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**Abstract:**

The main objective of this study is to assess the impact of corruption on the social, economic, environmental and political domains of sustainable development from individuals' perspective. The study also attempts to relate individuals' perceptions to their socioeconomic characteristics. The study uses the convenience sampling approach, where 521 responses are collected through an online-administered questionnaire. Each domain of sustainable development is defined by a set of items measured on a five-point Likert scale. Individuals' perceptions of the impact of corruption on sustainable development domains are assessed by measuring the mean score value of each item. The association between individuals' perceptions and their socioeconomic characteristics is evaluated using the independent-samples t-test. The study finds that the impact of corruption on the four domains of sustainable development as perceived by individuals is within the high level. Results also show a statistically significant difference between individuals from different socioeconomic groups in their perceptions of the impact of corruption on sustainable development. Results revealed that a high level of corruption would hinder the progress towards achieving Sustainable Development Goals (SDGs) at all levels. Therefore, improving

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the quality of governance in public institutions and controlling corruption is crucial to attaining economic and sustainable development.

**Keywords:**
corruption, economic domain, environmental domain, political domain, SDGs, social domain

## 1. Introduction

Corruption is considered one of the most persistent problems adversely affecting countries' economic growth and economic development (Murshed & Mredula, 2018; d'Agostino et al., 2016). Although a unified definition for corruption is lacking, the frequently used definition is that proposed by the World Bank where corruption is defined as the abuse of governmental institutions' power to achieve private benefits (Liu, 2016). Corruption has many different aspects, which include (i) financial corruption – defined as the abuse of power to achieve monetary benefits (Orakwue, 2017) – and (ii) administrative corruption – defined as any deviation practiced by governmental employees to achieve self-interest gains (Gouda, 2023). Administrative and financial corruption impedes the achievement of sustainable development goals (SDGs) and negatively affects the ability of state institutions to carry out all the tasks entrusted to them. Therefore, SDGs in all domains cannot be achieved without implementing administrative reforms and regulations seeking to curb the crime of corruption (Mousavi & Pourkiani, 2013).

Furthermore, goal number 16 in the 2030 SDGs requires the government to "*promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels*". Accordingly, the current research's primary goal is to analyse corruption's impact on achieving sustainable development. The research will focus on sustainable development's social, economic, environmental and political domains.

The impact of corruption on economic growth and other economic indicators has received much attention in the empirical literature (e.g. Malański & Póvoa, 2021; Damoah et al., 2017; Huang, 2016). It has been shown that countries in early stages of development tend to be more corrupt, and, hence, highly and negatively affected by corruption practices (Malański & Póvoa). Empirical evidence shows that corruption is highly associated with low levels of sustainable development (Hoinaru et al., 2020; Venard, 2013). Some of the empirical literature has focused on human capital development (Yaroson et al., 2017), while others investigated the impact of corruption on socioeconomic indicators, including poverty and unemployment (Rizki & Solihati, 2022). In general, it has been demonstrated that corruption practices represented in the abuse and misallocation of government resources reduce the government budget share

allocated for public and social benefits (O'Hare & Hall, 2022). Hence, these inefficiencies in the allocation of resources hinder the progress towards achieving the SDGs. Therefore, it is crucial to assess the impact of corruption on the implementation of and progress towards achieving the SDGs, especially in developing countries that committed to achieve the SDGs by 2030.

Regarding the social aspects of SDGs, the impact of corruption has been investigated on some indicators such as poverty (Hoinaru et al. 2020), income inequality (Akçay, 2006), and equality of opportunity in access to healthcare and education (Murshed & Mredula, 2018; Tiongson et al., 2000). As for the economic aspects, the main focus was on economic growth (Malański & Póvoa, 2021) and government budget allocation of resources (O'Hare & Hall, 2022; Borlea et al., 2017; Ivanyna et al. 2015). The impact of corruption on the environmental aspects was measured by looking at the correlation between corruption and pollution (Ren et al., 2022) and projects oriented towards alleviating the waste problem (Herder & Larsson, 2012). When looking at the political aspects, the impact of corruption was measured on individuals voting behaviour and political participation (Inman & Andrews, 2015), and on public trust in public institutions (Morris & Klesner, 2010).

In Palestine, corruption is an issue of crucial concerns for citizens, local investors, foreign investors, and donors. In a recent opinion poll conducted by the Coalition for Integrity and Accountability (AMAN) on the reality of corruption and combating it in Palestine, it has been shown that 58% of the respondents believed that corruption in Palestinian society is high (AMAN, 2020a). Further, about a third of Palestinian citizens think that policymakers and public employees are involved in corruption activities (Global Corruption Barometer, 2016). Moreover, it was indicated that 95% of Palestinian citizens believe that the spread of corruption is the primary obstacle to achieving SDGs (AMAN, 2020b).

The bulk of related research in the region uses cross-country data to measure the impact of corruption on economic growth or any indicator of economic or sustainable development (Bakari & Benzid, 2021; Fahad & Ahmed, 2016; Helmy, 2013). Most of the single-country analysis is applied to the Iraqi case (e.g. Alamry et al., 2022; Talab et al., 2019) as well as to the Egyptian case (Emara, 2020; Ghalwash, 2014) and the Algerian case (e.g. Bounoua & Matallah, 2014). The empirical literature on corruption needs to be improved in Palestine. Most of the literature uses the corruption perception index as a proxy variable for corruption. In Palestine, more data must be on this measure or any other numerical measure that measures corruption annually.

Further, to the best of our knowledge, there has been no previous attempt to assess the impact of corruption on SDGs from individuals' perspective. Therefore, the current study tries to fill this gap in the related literature by addressing the following two questions: (i) What is the impact of corruption on the social, economic, environmental and political domains of SDGs as perceived by individuals in Palestine?, (ii) Is there any statistically significant association between individuals' perceptions regarding the

impact of corruption on the domains of sustainable development and their socioeconomic characteristics. Accordingly, the following hypotheses will be tested:

$H_a^1$: There is a statistically significant difference between individuals with different levels of education in their perception regarding corruption's impact on sustainable development domains.

$H_a^2$: There is a statistically significant difference between individuals with different income levels in their perception regarding corruption's impact on sustainable development domains.

$H_a^3$: There is a statistically significant difference between employed and unemployed individuals in their perception regarding corruption's impact on sustainable development domains.

$H_a^4$: There is a statistically significant difference between individuals working in different sectors in their perception regarding corruption's impact on sustainable development domains.

The remaining of the paper is organized as follows. Section 2 presents the methodology used to fulfil the research questions. Section 3 reports the main results of the study. Section 4 discusses the results and some policy implications, while Section 5 concludes and provides future insights.

## 2. Theoretical-conceptual framework

This section defines the concepts of corruption and social, economic, environmental and political domains of sustainable development are defined. As mentioned, the current paper considers corruption practices within governmental institutions, whether financial or administrative. This type of corruption follows the strand of literature that is related to "*systemic corruption*", sometimes known as "*endemic corruption*" (Martinsson, 2021; Persson et al., 2012), as opposed to "*occasional corruption*" or "*incidental corruption*". Corruption is considered systemic if it is widespread and persistent within a country (or organisation) (Davis, 2021). Accordingly, corruption practices are perceived to be normal rather than exceptional.

Moreover, individuals are well aware of corruption practices and their negative impact. However, they know that even an anti-corruption organisation cannot enforce the punishment of the corrupt. Eventually, they will be involved in corruption practices such as paying a bribe to obtain the necessary public service.

Regarding the four domains of sustainable development, we define each domain based on the empirical literature examining the impact of corruption on SDGs in developing and developed countries, focusing mainly on corruption practised in governmental institutions. The dimensions/items of each concept are summarised in Table 2:

1.The social domain is defined in terms of the impact of corruption on (i) public allocations in the health sector, (ii) hampers public allocations in the education sector; (iii) poverty levels, (iv) income inequality, (v) brain drain of highly-skilled individuals, and (vi) the abuse of humanitarian aid.

2.The economic domain includes the following dimensions: (i) economic growth, (ii) government revenues, (iii) allocation of government revenues, (iv) government deficit and debt, and (v) private investments.

3.The environmental domain includes four dimensions that are mostly related to our context. These are (i) air pollution, including CO2 emissions, (ii) the implementation of laws oriented towards alleviating environmental deterioration, (iii) implementation of the public-private partnership oriented towards waste management problem, and (iv) the role of green projects oriented towards reducing environmental pollution.

4.The political domain is defined in terms of the effect of corruption on (i) democratic governance and the rule of law, (ii) individuals' voting behaviour and political participation, (iii) violations of human rights, and (iv) public trust in government institutions.

## 3. Methodology, research procedure and research methods

This study investigates the impact of corruption on the domains of SDGs from the point of view of citizens in Palestine. We use data from a sample that has been chosen using the convenience sampling approach. The survey was conducted during September-October 2022. An online questionnaire was created and administered to adult citizens residing in the West Bank of Palestine through social media. Eligible respondents include male and female adults ($\geq$ 18 years old) residing in the West Bank of Palestine. A total of 521 questionnaires were obtained.

The study uses a questionnaire that includes questions about individuals' perceptions regarding the impact of corruption on the social, economic, political and environmental domains of SDGs. The questionnaire is structured around five sections. The first section includes socio-demographic and socioeconomic questions such as gender, age, marital status, level of education, employment status, employment sector, place of residence, governorate and household income. The other four sections included questions about individuals' perceptions regarding the impact of corruption on the four domains of SDGs. Table 2 shows the items used to measure the impact of corruption for each domain of SDGs. These items were chosen based on the empirical literature on corruption, where the items are inspired by the analysis of the impact of corruption on the aspects of SDGs, as outlined in the previous section. The items presented here were selected per their relevance to the Palestinian context. Each item is measured using the five-point Likert scale – with values ranging from strongly disagree (1) to strongly agree

(5).

To answer the first question, we first summarise people's perceptions regarding each item of the four domains of SDGs by calculating the mean score of the Likert scale for each item. Then the level of corruption from individuals' perspective is assessed based on the mean value as follows: very low (mean $\in [1.00, 1.80)$); low (mean $\in$[1.80, 2.60)); moderate (mean $\in$ [2.60, 3.40)); high (mean $\in$ [3.40, 4.20)), and very high (mean $\in$[4.20, 5.00]) (Gabriel, 2017). In order to answer the second question, we test the association between individuals' characteristics and their perceptions regarding the impact of corruption on the items of the four domains of SDGs. The hypotheses were tested using the independent-samples t-test. We test the relationship between a selected set of items of the four domains – which are deemed to be important – and individuals' characteristics, including the level of education (higher education vs secondary education); income (low vs high); employment status (employed vs unemployed), and employment sector (public vs other).

The main socio-demographic and socioeconomic characteristics of the sample are summarised in Table 1. The sample size is first provided for each characteristic, while the sample share is in parentheses. Table 1 shows that the sample size is 521, 57% female. The average age of respondents is 29.7 years. 60.7% and 30.3% are, respectively, single and married, while the divorced and widowed individuals represent 9% of the sample. The shares of individuals living in rural and urban areas are equal (46.4%), while only 7.1% of the respondents reside in refugee camps. Approximately the sample live in Ramallah and the Albira governorate (48.6%), followed by Nablus (9.8%), Jerusalem (9.4%), Salfit (6.1%), Hebron (6.0%), and Jenin (5.0%). The sample share of all the other governorates (Bethlehem, Qalqilya, Tubas, Tulkarem and Jericho) represents 15.1%.

Most individuals hold a Bachelor's degree or diploma (68.5%), while 10.2% and 2.9% hold, respectively, a Master's degree or a PhD. The remaining sample has secondary (12.9%) or less than secondary education (5.6%). Looking at household total income, approximately a third of the sample indicated a household monthly income of 2000 to 3500 ILS (34.4%) and 3500 to 5000 ILS (32.4%). 7.5% belongs to the lowest income category (less than 2000 ILS), while 25.7% is in the highest income category (more than 5000 ILS). Regarding employment status, 13.1% are out of the labour force, 29.8% are unemployed, and 56.8% are employed, with 28.7% employed in the public sector, 52.3% in the private sector and 19.0% in NGOS.

**Table 1:**

The main characteristics of the sample

| | |
|---|---|
| **Size** | **521** |
| **Female** | **297 (57.0%)** |
| **Age** | **29.7** |
| **Marital status** | |
| Single | 316 (60.7%) |
| Married | 158 (30.3%) |
| Others (Widowed and divorced) | 47 (9.0%) |
| **Place of residence** | |
| Rural | 242 (46.4%) |
| Urban | 242 (46.4%) |
| Refugee camps | 37 (7.1%) |
| **Governorate** | |
| Ramallah and Albira | 253 (48.6%) |
| Nablus | 51 (9.8%) |
| Jerusalem | 49 (9.4%) |
| Salfit | 32 (6.1%) |
| Hebron | 31 (6.0%) |
| Jenin | 26 (5.0%) |
| Other governorates (Bethlehem, Qalqilya, Tubas, Tulkarem and Jericho) | 79 (15.1%) |
| **Level of education** | |
| Lower than secondary | 29 (5.6%) |
| Secondary | 67 (12.9%) |
| Bachelor or diploma | 357 (68.5%) |
| Masters | 53 (10.2%) |
| Ph.D. | 15 (2.9%) |
| **Level of monthly income** | |
| Less than 2000 ILS | 39 (7.5%) |
| 2000 to 3500 ILS | 179 (34.4%) |
| 3500 to 5000 ILS | 169 (32.4%) |
| More than 5000 ILS | 134 (25.7%) |
| **Employment status** | |
| Out of the labour force | 68 (13.1%) |
| Employed | 296 (56.8%) |
| Unemployed | 155 (29.8%) |
| **Sector of employment** | |
| Public | 85 (28.7%) |
| Private | 155 (52.3%) |
| NGOs | 56 (19.0%) |

Source: Author's own, 2023.

# 4. Results

## 4.1 Individual's perceptions about the impact of corruption on the four domains of SDGs

This section summarises the main results related to the first question about the impact of corruption on the domains of SDGs. Table 2 shows that the mean scores of the impact of corruption on the four domains of SDGs as perceived by individuals are within the high level (the mean scores are between 3.4 and 4.2). High mean scores indicate that individuals believe that corruption adversely affects social, economic, environmental and political sustainable development. First, in the social domain, the mean score of the impact of corruption on income inequality is the highest (3.95), followed by brain drain (emigration of highly-skilled individuals), then poverty and abuse of humanitarian aid. The mean scores for these items of the social domain of SDGS are, respectively, 3.92, 3.91 and 3.90. The impact of corruption on equal opportunity in access to healthcare and education obtained lower mean scores (3.75 vs 3.84) than the other items of the social domain.

Next, regarding the impact of corruption on the economic domain, the highest mean score is observed for the impact of corruption on private investment and progress of small and medium-sized enterprises (3.83). Further, individuals consider that corruption may increase government deficit and debt, with a mean score of 3.81, and may lead to misallocation of government revenues with a mean score of 3.79. The fact that corruption reduces government revenues and economic growth obtained a mean score of 3.74 as perceived by individuals.

Regarding the environmental impact, only individuals' perceptions of the impact of corruption on pollution, especially CO2 emissions is found to be moderate (mean score = 3.23). As for the other domains of the environmental aspect of SDGs, individuals believe that corruption hampered the implementation of laws oriented towards alleviating environmental deterioration at a high level with a mean score of 3.44. Also, they firmly believe that corruption hampered the implementation of green projects and public-private partnership projects oriented towards waste management problems with mean scores of 3.48 and 3.46.

Lastly, results on the political domain of SDGs show that individuals think that corruption reduces trust in governmental institutions at a high level (mean score = 3.90). Similarly, individuals firmly believe that corruption lead to violations of human rights, affects voting behaviour and political participation, and undermine democratic governance and the rule of law.

**Table 2:**

The items of the four domains of SDGs

| ***Domain*** | ***Item*** | ***Source*** | ***Mean score*** |
|---|---|---|---|
| **Social** | Corruption hampers public allocations in the health sector; thus, it may hinder equal access to healthcare and worsen the quality of healthcare | Murshed & Mredula (2018); Tiongson et al. (2000) | 3.75 |
| | Corruption hampers public allocations in the education sector; thus, it may reduce equal opportunities in education | Murshed & Mredula (2018); Tiongson et al. (2000) | 3.84 |
| | Corruption increases poverty levels | Hoinaru et al. (2020) | 3.91 |
| | Corruption increases income inequality | Akçay (2006) | 3.95 |
| | Corruption may increase brain drain (emigration of highly-skilled individuals) | Cooray & Schneider (2015) | 3.92 |
| | Corruption may lead to the abuse of humanitarian aid | BouChabke & Haddad (2021) | 3.90 |
| | Overall | | 3.88 |
| **Economic** | Corruption may hinder economic growth | Malański & Póvoa (2021) | 3.74 |
| | Corruption reduces government revenues, especially tax revenues due to tax avoidance | Borlea et al. (2017); Ivanyna et al. (2015) | 3.74 |
| | Corruption leads to misallocation of government revenues | O'Hare & Hall (2022) | 3.79 |
| | Corruption increases government deficit and debt as well as the debt service | Cooray et al. (2017); Kaufmann (2010) | 3.81 |
| | Corruption may hinder private investments and limit the progress of small and medium-sized enterprises | Amate-Fortes et al. (2015); Campos et al. (2010) | 3.83 |
| | Overall | | 3.78 |
| **Environmental** | Corruption may lead to an increase in pollution, especially $CO^2$ emissions | Murshed & Mredula (2018); Ünver & Koyuncu (2017) | 3.23 |
| | Corruption hampers the implementation of laws oriented towards alleviating environmental deterioration | Islam & Lee (2016) | 3.46 |
| | Corruption may affect the implementation of the public-private partnership private oriented towards waste management problem | Herder & Larsson (2012) | 3.44 |
| | Corruption may lead to a decrease in the role of green projects oriented towards reducing environmental pollution | Ren et al., (2022) | 3.48 |
| | Overall | | 3.40 |
| **Political** | Corruption may undermine democratic governance and the rule of law | Hoinaru et al. (2020) | 3.67 |

| | | | |
|---|---|---|---|
| | Corruption affects individuals' voting behaviour and political participation | Inman & Andrews (2015) | 3.77 |
| | Corruption leads to violations of human rights | Ren et al. (2022) | 3.87 |
| | Corruption reduces public trust in government institutions | Morris & Klesner (2010); Lavallée et al. (2008) | 3.90 |
| | Overall | | 3.80 |

Source: Author's own, 2023.

## 4.2 Hypotheses testing

The section summarised results pertaining to the second question of the study. In order to relate the above results to individuals' characteristics, this section tests the association between some selected items of the four domains of SDGs and individuals' socioeconomic characteristics. The results are summarised in Table 3. Each item has two rows; the first summarises the mean score of the item for each group, while the second summarises the significance level of the independent-samples t-test. The first hypothesis to be tested is about the statistically significant difference between individuals with different levels of education in their perception of corruption's impact on sustainable development domains. The results show a statistically significant difference between those with higher education and those with only secondary education or less in their perception of the impact of corruption on the role of green projects oriented towards reducing environmental pollution. Individuals with higher education report a higher mean score (3.54) compared to those with lower education (3.23).

The second and third hypotheses concern the statistically significant difference between individuals with different levels of income and employment status in their perception of corruption's impact on sustainable development domains. In general, there is a statistically significant difference between individuals according to income and employment differences in their perceptions of the impact of corruption on the different domains of SDGs. For example, individuals with high income have a higher mean score regarding the impact of corruption on economic growth (3.85) than a mean score of 3.59 for individuals with low income. Further, employed individuals' perceptions of the impact of corruption on the allocation of government revenues obtained a statistically higher mean score than that perceived by the unemployed (3.89 vs. 3.59).

The last hypothesis tests the existence of the statistically significant difference between individuals working in different sectors in their perception of the impact of corruption on the domains of sustainable development. The results show a statistically significant difference between those working in the public sector and those working in the private sector or NGOs in their perception of the impact of corruption on the role of green projects oriented towards reducing environmental pollution.

**Table 3:**

The association between selected items of the domains of the SDGs and individuals' characteristics

| Item | Education[1] | | Income[2] | | Employment status | | Employment sector[3] | |
|---|---|---|---|---|---|---|---|---|
| | Secondary | High | Low | High | Employed | Unemployed | Public | Other |
| Corruption increases poverty levels | 3.82 | 3.93 | 3.73 | 4.04 | 4.04 | 3.72 | 3.93 | 3.97 |
| | 0.386 | | **0.002** | | **0.003** | | 0.783 | |
| Corruption increases income inequality | 3.76 | 3.99 | 3.74 | 4.09 | 4.09 | 3.68 | 3.94 | 4.00 |
| | 0.058 | | **0.000** | | **0.000** | | 0.674 | |
| Corruption may increase brain drain (emigration of highly-skilled individuals) | 3.88 | 3.93 | 3.74 | 4.05 | 3.97 | 3.80 | 3.93 | 3.89 |
| | 0.651 | | **0.001** | | 0.112 | | 0.746 | |
| Corruption may hinder economic growth | 3.71 | 3.75 | 3.59 | 3.85 | 3.81 | 3.59 | 3.74 | 3.74 |
| | 0.719 | | **0.005** | | **0.039** | | 0.990 | |
| Corruption reduces government revenues, especially tax revenues due to tax avoidance | 3.60 | 3.76 | 3.56 | 3.86 | 3.83 | 3.57 | 3.86 | 3.75 |
| | 0.164 | | **0.001** | | **0.011** | | 0.343 | |
| Corruption leads to misallocation of government revenues | 3.70 | 3.81 | 3.61 | 3.92 | 3.89 | 3.59 | 3.89 | 3.76 |
| | 0.311 | | **0.000** | | **0.003** | | 0.273 | |
| Corruption may affect the implementation of the public-private partnership oriented towards waste management problems | 3.24 | 3.49 | 3.43 | 3.45 | 3.43 | 3.35 | 3.28 | 3.44 |
| | 0.052 | | 0.836 | | 0.539 | | 0.254 | |
| Corruption may lead to a decrease in the role of green projects oriented towards reducing environmental pollution | 3.23 | 3.54 | 3.44 | 3.51 | 3.49 | 3.35 | 3.25 | 3.53 |
| | **0.018** | | 0.488 | | 0.244 | | **0.043** | |
| Corruption affects individuals' voting behaviour and political participation | 3.69 | 3.79 | 3.57 | 3.91 | 3.84 | 3.54 | 3.74 | 3.80 |
| | 0.390 | | **0.000** | | **0.004** | | 0.606 | |
| Corruption reduces public trust in government institutions | 3.79 | 3.93 | 3.61 | 4.09 | 3.98 | 3.66 | 3.93 | 3.92 |
| | 0.255 | | **0.000** | | **0.003** | | 0.948 | |

1 Secondary education includes those with either secondary education or less than secondary education, while higher education includes those with bachelor or diploma, master and PhD degrees.

2 The low-income group includes those with income less than 3500 ILS, while the high-income group includes those with income higher than 3500 ILS.

3 Other includes those working in the private sector and NGOs.

## 5. Discussion

Some of the main interesting results obtained from this paper are worth highlighting and discussing in terms of the existing empirical evidence and the achievement of SDGs. First, the impact of corruption on the four domains of SDGs is high as perceived by individuals. Palestinian citizens believe that corruption practices in governmental institutions hinder the progress towards achieving SDGs particularly, social, economic, environmental and political goals. This is consistent with the empirical evidence suggesting that different forms of systemic corruption may lead to development failure (Otuonye, 2020). Furthermore, available literature on developing countries shows that systemic corruption may discourage investment, affect government spending, particularly spending devoted to the education and health sectors, and hence reduce economic growth (Keeper, 2011). Secondly, results regarding the impact of corruption on the social domain demonstrate that corruption can increase inequality: income inequality and inequality of opportunities in access to services – mainly health and education. Such results support the theory stating that corruption leads to changes in income distributions and increase income inequality (Gyimah-Brempong & de Gyimah-Brempong, 2006).

Furthermore, such negative impact of corruption would hinder achieving goal number 3 – good health and well-being – and goal number 4 – quality education – as well as goal number 10 – reduced inequalities. This finding is in line with the empirical evidence suggesting that corruption would reduce public spending, increasing inequality in access to health and education (Swaleheen et al., 2019). In addition, empirical evidence shows that systemic corruption in the education sector, where individuals deal with corruption as normal behaviour, would decelerate the development process (Karimli, 2022). Thirdly, the current study shows that individuals believe that corruption may hinder economic growth and lead to misallocation of government revenues. Most of the existing literature uses the international perception of corruption index to measure the long run impact of corruption on economic growth. This strand of literature reveals that corruption would reduce the GDP per capita and the economic growth over time (Malański & Póvoa, 2021; Gründler & Potrafke, 2019; Damoah et al., 2017). Thus, with the persisting level of corruption in the country, it is difficult to progress towards achieving goal number 8 of the SDGs: "*Promote sustained, inclusive and sustainable economic growth…*". Fourth, results on the impact of corruption on the environmental domain of sustainable development support the empirical evidence indicating that corruption may lead to an increase in pollution especially CO2 emissions (Ünver & Koyuncu, 2017) and that corruption may lead to a decrease in the role of projects oriented towards reducing environmental pollution (Ren et al., 2022) and alleviating the waste problems (Herder & Larsson, 2012). Alleviating corruption would reduce the negative impact on the environment, hence improving progress towards many SDGs which are directly and indirectly related to the environment, such as goal 6 – clean water and sanitation, goal 7 – affordable and clean energy, goal 13 – climate action, goal 14 – life below water, and goal 15 – life on land.

Fifth, results on the political domain of SDGs show that corruption may affect individuals' voting behaviour and reduce their trust in public institutions. These findings also align with the empirical evidence as shown at the outset. Lastly, the current results show that individuals' perception of the impact of corruption on the four domains of SDGs may differ based on individuals' socioeconomic characteristics. For example, the impact of corruption on the role of green projects oriented towards reducing environmental pollution is higher when perceived by individuals with higher education compared to individuals with secondary education or less.

Furthermore, employed individuals and individuals with high incomes have higher mean score regarding the impact of corruption on the social and economic domains of SDGs. Lastly, available evidence shows that to curb corruption and progress towards achieving the SDGs, corruption should be perceived as a collective-action problem – as opposed to a principal-agent problem (Persson et al., 2012), which entails that everyone in the system should cooperate with others to curb corruption rather than acting selfishly to achieve only self-interests.

## 6. Conclusion

Corruption has been considered an everlasting chronic issue in developing countries. This study mainly aims to evaluate the impact of corruption on social, economic, environmental and political domains of sustainable development in Palestine from the citizens' point of view. The results obtained from this study align with previous empirical evidence demonstrating that a high level of corruption would hinder the progress towards achieving SDGs at all levels (social, economic, environmental and political). Many developing countries, including Palestine, have committed to achieving SDGs by 2030. However, Palestine has not yet made noticeable progress in achieving most of the SDGs, including those related to health, education, inequality, poverty, and environmental and political goals. SDG 16 is the goal related to enhancing anti-corruption policies, mainly Target 16.3, which is about promoting "the rule of law at the national and international levels and ensure equal access to justice for all"; Target 16.5 regarding "Substantially reduce corruption and bribery in all their forms", and Target 16.6 concerning developing "effective, accountable and transparent institutions at all levels". Therefore, to accelerate the progress towards implementing and achieving SDGs in Palestine, it is crucial to successfully develop anti-corruption policies that are in line with the targets of SDG 16 and are feasible in the Palestinian context.

Furthermore, it is imperative to enforce the application of these policies, monitor their implementation over time, and update them in case needed. First, improving the quality of governance in public institutions and controlling corruption is necessary to attain economic and sustainable development. It is also necessary to practice a democracy that offers greater opportunity for broad public participation, whether in elections or developing programmes and policies and monitoring their implementation.

It is also crucial to ensure effective political will to combat corruption and take appropriate measures to enhance transparency and integrity, which are essential to all policies, programmes and projects. It is crucial to reconsider allocating the general government budget across all economic sectors, mainly health and education. The government could also combat corruption by implementing effective laws that are intended to criminalise any employee in the public sector who practice any kind of corruption. Finally, the government should create a specific unit that is responsible for collecting, analysing and monitoring all the financial data related to all public institutions. This step would help alleviate financial corruption and the associated negative impact on the different domains of sustainable development.

This paper adds to the empirical literature of corruption in Palestine and the region as it attempts to analyse the impact of corruption on SDGs from individuals' perspectives. However, some limitations of the study are worth highlighting. First, the current analysis accounts for four domains of sustainable development only. Further studies on the impact of corruption on other indicators and domains of SDGs are needed. For example, given the evident level of corruption in the education and health sectors in the country, it is crucial to assess the impact of corruption on these two important sectors using actual data. Second, the study assesses corruption's impact at a given time. However, the level of corruption is still high and increasing based on citizens' beliefs. Accordingly, future research may be devoted to analysing the dynamic of corruption and its impact on the progress towards attaining the SDGs, mainly gaol 16, which is about prompting societies for sustainable development and building accountable institutions.

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# Key Criteria Influencing Stakeholders' Decision-making about PB Continuation: The Case of the Czech Republic

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**Abstract:**

Participatory budgeting (PB) is a modern trend involving citizens in decisions on distributing public resources. Assuming that the identified drawbacks of PB are described as internal and external factors, simple criteria were developed to predict the fate of PB. These criteria reflect stakeholders' decisions about PB continuation in the future. Using panel data between 2017-2022 from the Czech Republic, it appears that the selected criteria were evaluated as an upgrading process, signalling the continuation of PB. However, this does not mean abandoning the process in the case of downgrading. The results indicate a certain probability for upgrading PB to continue, while the fate of downgrading PB is indeterminate and could depend on other factors. In the case of new governance after an electoral change, using the criteria could help explain the actual situation regarding the interest of stakeholders in PB.

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**Keywords:**
Czech Republic, drawbacks, factors, fate, participatory budgeting

## 1. Introduction

Participatory budgeting (PB) is a process of democratic policymaking that invites citizens to participate in the budget process and accepts their influence over budget allocations (Zhang & Yang, 2009).

Most of the current PB literature emphasises its advantages and opportunities (e.g. Cabannes, 2004; UN-Habitat, 2008, Sintomer et al., 2010, Dias & Simone, 2014; Herzberg et al., 2014, Krenjova & Raudla, 2017). Papers that concern implementation barriers or risks associated with PB are somewhat rare (e.g. Font et al., 2017; Bartocci et al., 2022). As such, Džinić et al. (2016) emphasised the need for further research on the expenses and risks connected with PB. In addition, these barriers are significant in times of rapid changes and external shocks (pandemic, energy and migration crisis), which might affect PB. Until now, there is only limited knowledge about the influence of the pandemic on the tenacity of participatory budgeting (Baranowski, 2020; Bardovič & Gašparík, 2021; Cho et al., 2021; Burkšienė et al., 2022).

This article aims to determine the key criteria reflecting stakeholders' decision about PB continuation in the future. The main benefits of the paper are twofold: for scholars, it is an extension of the concept of barriers to PB influencing the stakeholders' interest in maintaining PB; for practitioners, it is a matter of testing real examples of PB and identifying its future development via selected simple criteria associated with a higher probability of continuation or termination of PB.

There is no universal PB model, and numerous schemes have addressed specific conditions in each country (Stewart et al., 2014). PB projects could enhance social justice (typical for Brazil) or economic efficiency (often in Germany). However, in the Czech Republic case, they are more about expanding existing infrastructures and promoting innovative solutions. Although there are not many cases of PB in the Czech Republic (almost 90 in 2022), it has become more prolific since its introduction in 2014. We also noted several instances when PB was terminated for various reasons, which led us to explore the reasons behind why it failed, and which became more apparent in the context of the extraordinary situation during the COVID-19 pandemic.

The paper follows a three-part structure. First, we provide a brief literature review of possible internal and external factors that impact PB Possible drawbacks of PB are identified as internal factors, and four simple key criteria are chosen that signal a higher probability of PB continuation or interruption. Second, the key criteria with detailed descriptions of the relevant data sources from the Czech Republic are applied. Each criterion is evaluated separately as downgraded or upgraded based on Alves and Allegretti (2012). Subsequently, the number of PB cases with downgraded criteria that were abandoned the following year are determined, and the PB cases with upgraded

criteria that continued in the upcoming period is identified. Third, the paper presents the results and discusses possible implications for continuing PB. When key criteria were upgraded, there is a relatively high probability that a particular PB will continue in the following year; the fate of PB is less clear for downgraded criteria and it is not possible to unambiguously predict the development of PB in the future.

## 2. Internal and external drawbacks to the PB process

Like Alves and Allegretti (2012), we distinguish between internal and external groups of PB factors. In this paper, internal factors encompass the aspects of PB and their design that can be reasonably affected by municipalities and their officials. External bottlenecks refer to factors outside PB and their setting.

First, we briefly describe external factors of PB continuation, and then we focus on internal factors that are crucial for our empirical section and identification of key factors.

External barriers were identified in three areas: political, economic, and social. Political factors include political will and election turnover (Allegretti, 2014; Alves & Allegretti, 2012; Cabannes, 2004; Goldfrank & Schneider, 2006; UN-Habitat, 2008; Balážová et al., 2022; Murray Svidroňová et al., 2023) and bureaucracy (Allegretti & Herzberg, 2004; Pape & Lerner, 2016). Zhang and Yang (2009) consider the attitude of council managers toward citizen participation to be an important factor in explaining local governments' adoption of PB. Without a strong commitment from governing parties to share decision-making power with citizens, legislators may object to mobilising the population through PB (Goldfrank, 2006; Jacobi, 1999; Wampler, 2012; Zhang & Liao, 2011).

Bassoli (2011) states that the threat of bureaucratisation is one of the critical aspects of PB. The introduction of PB depends on the number of qualified employees in the involved municipal administration (Goldfrank, 2006; McNulty, 2012).

Economic factors encompass national and global economic factors and the financial possibilities of individual municipalities (Navarro, 2004). Global economic factors are often connected with external shocks such as financial or economic crises. National economic factors refer to the national government policies and country specific factors impacting municipal revenues.

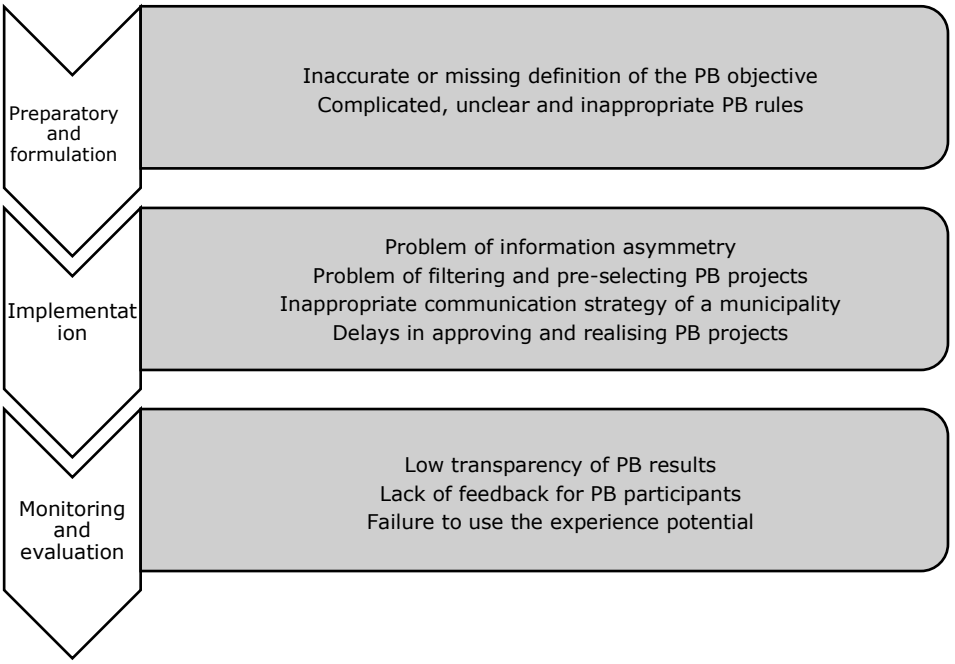
The financial possibilities of individual municipalities are a significant factor that is often outside their direct ability to influence. When the PB funds are relatively small, it limits the process significantly (Boulding & Wampler, 2010; McNulty, 2012; Pape & Lerner, 2016). Similarly, Fölscher (2007) states that the expenditure responsibilities of local governments often do not match their revenue capacity, which has limited PB introduction in Central and Eastern European (CEE) countries.

Goldfrank (2007) considers societal structure to be one of the most relevant factors for potentially facilitating the successful implementation of PB. Civil society associations—preferably disposed to participate in municipal affairs—organised in networks increase the possibility of introducing and implementing PB (Navarro, 2004). When pilot PB projects were introduced in CEE countries, more citizens were mistrustful of collective action because of the historical development of civil society (Fölscher, 2007).

Unlike external barriers that affect PB from the outside, internal factors present possible drawbacks arising from the PB. Based on the definition of PB phases advanced by UN-Habitat (2008), we differentiated three phases: the preparatory and formulation, implementation, and monitoring and evaluation. Figure 1 identifies internal barriers across all phases. The empirical part of this study will focus on internal barriers to the continuation of PB.

**Figure 1:**

Internal drawbacks to the continuation of PB




Source: Authors' own, 2023.

In the preparatory and formulation stage, it is crucial to design PB and determine an appropriate PB objective in line with a municipality's cultural, economic, social and political conditions (Allegretti and Herzberg, 2004, UN-Habitat, 2008). So as to

encourage citizens to participate, the PB procedure should be simple (Kempa & Kozłowski, 2020). Furthermore, Bhatnagar et al. (2003) indicate that setting accurate rules for PB is necessary. Additionally, they should be publicly available and provided in an accessible format (Goldfrank, 2006).

Some scholars demand strict rules without the possibility of changing them significantly in the future. One of the mentioned reasons for the rigid rules is to set up PB to withstand electoral turnover and shifts in the political ideologies of leaders (Goldfrank, 2006). Others suggest providing fundamental principles and basic procedural rules that can change and improve according to the feedback on and the results of PB implementation (Baiocchi & Ganuza, 2014).

During the implementation stage, the problem of asymmetrical information may occur. The permanent dialogue based on reciprocity to increase citizen engagement is crucial for the success of PB (Jacobi, 1999). Consequently, the municipality must inform citizens with why some projects were rejected, and others preferred (Allegretti, 2014). Unsuccessful participation in PB could result in participatory frustration—a term used by Fernández-Martínez et al. (2020) to refer to a participant's experience perceived as falling short of the expectations set by political leaders. According to Font et al. (2017), it is difficult to make the excluded accept that their proposals deserved to be less financed than accepted ones.

An additional drawback is the insufficient use of social media to involve citizens in budget decisions. Municipalities usually use these tools mainly for marketing purposes, but their use for participatory governance is limited, as shown by research on Slovak municipalities (Murray Svidroňová et al., 2018).

When unexpected problems occur during project realisation, it could significantly prolong the PB's total time. Most of the complications concern unsolved property rights, additional costs of the approved project (Džinić et al., 2016), delays caused by the negotiations between the executive and legislature in approving the budget/projects (Jacobi, 1999), or lack of centralised supervision (Goldfrank, 2006). Bhatnagar et al. (2003) warn that the slow progress of public works could be frustrating for the participating public and might distract other municipalities from introducing PB.

The monitoring and evaluation stage presents an opportunity for feedback that could improve PB in the future (Černý, 2016; Jacobi, 1999, 2006). Procedural rules could be adapted to new settings and community needs (Avritzer, 2017). Every PB could align with specific political and social conditions in each municipality (Allegretti & Herzberg, 2004; Bhatnagar et al., 2003; UN-Habitat, 2008). Some of these conditions could be revealed only after the realisation of the PB pilot project.

These possible internal drawbacks to continuing PB could become apparent and result in a reduction of the interest of two groups of stakeholders, politicians and citizens, as potential voters and proposers of PB projects. When politicians judge PB as unsuccessful and ineffective, they can propose changes that could eliminate them by reducing the amount determined for PB projects. This decrease could be measured as

the change in the absolute amount of PB funds or as a change in the percentage of the amount for PB projects on total municipal expenditures (criteria 1 and 2). Fewer financial resources for PB may further demotivate citizens from participating in PB.

Additionally, inhabitants of municipalities could be distracted from or frustrated by PB because of the internal drawbacks mentioned above. Their decline in interest may result in a lower participation rate in the voting phase of PB (a lower PB voter turnout, criterion 3) or a deficiency in proposing an activity (a lower number of PB projects proposals, criterion 4). The number of proposals could measure citizen participation focused on the activation of proposers (Hong, 2016; Krueger & Park, 2020). The higher the number of proposed projects, the more likely a citizen might find a project that is interesting and relevant for them to vote for, and more voting options could increase voter turnout (Haman & Školník, 2020). When only a few citizens participate, PB may not represent the interests of the majority, and thus, the legitimacy of the process is rather low (Bhatnagar et al., 2003; Wampler, 2012; Zepic et al. 2017)). A low participation rate was often identified as a problem in the CEE countries analysed by Džinić et al. (2016) and Fölscher (2007).

Based on identified internal factors, the concept of volatility and fragility of PB has been expanded and reflects the instability of the framework introduced by Alves and Allegretti (2012). Upgrading refers to an ongoing process of PB that aims to amplify its coverage. In contrast, the downgrading process contains a set of moderating alterations aiming to diminish the potential impact of the participatory process (Alves & Allegretti (2012). The classification of cases of PB as a downgrading or upgrading process by Alves and Allegretti (2012) was focused on the change in the organisational model of PB. It did not define specific criteria for evaluation. For this reason, we proposed our concrete criteria, reflected the change in the interest of the identified groups of PB stakeholders (politicians and citizens), and tested the case of the Czech Republic as to whether they could detect the fate of PB.

## 3. Data and methods

This paper is based on our own extensive database of municipal PB cases in the Czech Republic. Our database was compiled using publicly available information on the websites of individual municipalities. It contains 136 PB cases in 62 municipalities. Data on the number of inhabitants and voter turnout is from the Czech Statistical Office (CSO), and data on municipal expenditures come from the Monitor (an open data portal of the Ministry of Finance of the Czech Republic). Data on PB budgets are from official municipality websites or publicly available rules of PB for a particular year. Additionally, publicly available minutes of municipal councils concerning decision-making about PB were examined.

The parameters of 60 PBs (from all 136 cases) in 30 municipalities were compared

between 2017 and 2018 (including 18 municipalities) and 2018 and 2019 (including 12 municipalities). Additionally, their continuation in the following years (2019 and 2020) was tested. However, in three municipalities, the process was postponed to both the following year or extended by one year, causing a problem in comparability. In 2020, the reasons often presented on the websites for this step were connected to COVID-19, e.g. resulting in the limited possibility of both discussing or voting on proposals or fewer financial sources (external factors).

Therefore, the follow-up period 2019-2022 was tested to verify the applicability of the criteria in an extraordinary crisis period. The development of indicators about PB between 2019 and 2020 in 35 municipalities and subsequently between 2020 and 2021 in 41 municipalities were examined, and their termination in 2021 and 2022 were checked.

We designed simple and concrete criteria to classify PB as downgrading or upgrading. These criteria express the change in the interest of two groups of stakeholders in PB: politicians (criterion 1 and 2) and citizens as potential voters (criterion 3) and proposers of PB projects (criterion 4). Theoretically, we explained possible reasons for the reduction of interest in PB by identifying internal drawbacks to PB. We assume that the position of politicians on the funds determined for PB incorporates some of the external factors, i.e. political (e.g. political will and election turnover) and economic (availability of financial resources).

Each PB was evaluated for each criterion as downgrading, upgrading, or stable. The increase in key criteria detected an upgrading PB, and the decline indicated downgrading. When the analysed criteria remained the same, the term 'stable' was used.

Our proposed upgrading/downgrading criteria are:

1. An increased/decreased budget for PB projects compared to the previous year's figures (PB amount in EUR) = criterion 1
2. A higher/lower amount for PB projects as a percentage of total municipal expenditures compared to the previous year (PB amount in %) = criterion 2
3. A higher/lower voter turnout in PB compared to the previous year as the voters' participation (PB voter turnout) = criterion 3
4. An increased/decreased number of proposals compared to the previous year as a reflection of the activities of proposers (proposals) = criterion 4

Criteria 1 and 2 might seem similar, but the relevancy of criterion 2 relates to the need to control changing economic conditions (included in external factors). The voter turnout in PB means the voter turnout for PB projects. It is measured as the number of PB voters against the number of all potential voters (based on the data for municipal elections in 2018 from the Czech Statistical Office). The first two criteria indirectly incorporate political will as an external factor framed by the economic possibilities of municipalities. The number of proposals contains all proposals submitted to the officials regardless of their approval for voting. The use of this criterion enables the

measurement of civic activity in proposing the PB projects, regardless of the politicians' final decision on approved projects. Subsequently, we tested the destiny of downgrading and upgrading PB in the next period to estimate how many downgrading PB cases could be abandoned the following year or at risk of finishing and to evaluate if the upgrading PB cases are more likely to continue in the future.

Based on our assumptions, we formulated two hypotheses:

H1: A PB with the defined criteria (1-4) evaluated as downgrading has a higher probability that the PB process will be abandoned.

H2: A PB with the defined criteria (1-4) evaluated as upgrading has a higher probability that the PB will be ongoing.

For evaluation purposes, higher probability is defined as the percentage of the analysed PB cases with abandoned or ongoing status over 50%. We presume that testing two hypotheses is necessary because upgrading a particular criterion could have a different impact on the fate of a PB than its downgrade. The hypotheses will be tested for each defined criterion (1–4), and the evaluation result will be the classification of the PB as upgrading, downgrading, or stable for every criterion.

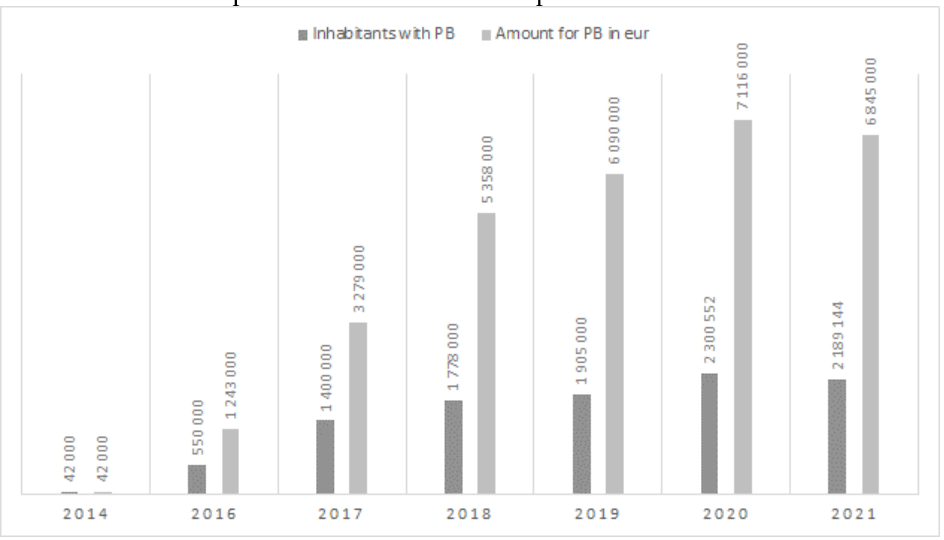
## 4. Research methods and main steps of the research methodology

The settlement structure and the composition of public administration determine the development of PB cases in the Czech Republic. The administration is one of the most fragmented in Europe, where 80% of municipalities have less than 2,000 inhabitants. In smaller municipalities, the leaders (mayors) are relatively close to the voters (Matějová et al., 2017) and have better opportunities to listen to their needs. However, these municipalities often have a problem providing public services because of limited financial resources and capacity (Nemec et al., 2016; Matějová et al., 2017; Swianiewicz & Łukomska, 2017), although the direct relationship between size and economies of scale has not been proven in the Czech Republic (Soukopová et al., 2014).

PB is mainly developing in larger cities; therefore, the share of the total population potentially involved in PB is relatively high (almost 20% of the country's population in 2020). The history of PB is relatively short in the Czech Republic, which had its first experimental PB in 2014. Others started in 2016, and subsequently, the number of implemented PB cases grew steadily to 87 in 2021. The year of a PB was assigned according to the year when voting for the PB projects was conducted.

**Figure 2:**

Spread of PB in the Czech Republic from 2014–2021



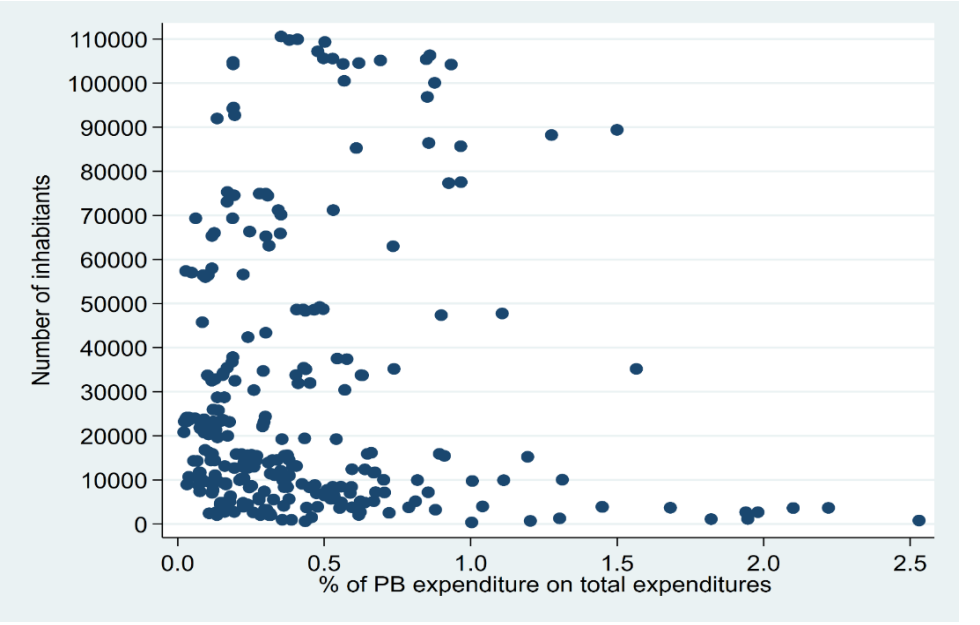

Source: Authors' own, 2023

The number of inhabitants who could participate in PB increased from 42,000 in 2014 to almost two million in 2020. The amount allocated for PB projects was approximately € 6 million in 2020 (see Figure 2). However, the average amount for PB projects per inhabitant remains low: it was only approximately € 3 in the whole period from 2017–2019. The share of the budget allocated to PB from total municipal expenses is relatively low (0.5%) for 2016–2019. From this point of view, there is room for an overall percentage increase in expenditure on the budget relative to total municipality expenditures. However, the share for PB projects as part of the total budget is comparable to developments in other countries.

When we look at the number of inhabitants (Figure 3), the percentage of PB expenditure on total expenditures does not depend on the size of the municipality. Although larger municipalities nominally spend more on PB projects, it is less in terms of the share of the total budget. However, a share of over 1.5% could only be found in the municipalities with less than 40,000 inhabitants. For the analysis, we did not show the municipality of Brno, which has an extraordinary number of inhabitants (almost 400,000) compared to other municipalities (the highest number was slightly below 120,000). Background information about the Czech Republic in connection with the selected criteria for PB classification as described in the methodology is presented in Figures 3 and 4.

**Figure 3:**

Number of inhabitants and % of PB expenditure on total expenditures from 2014–2021

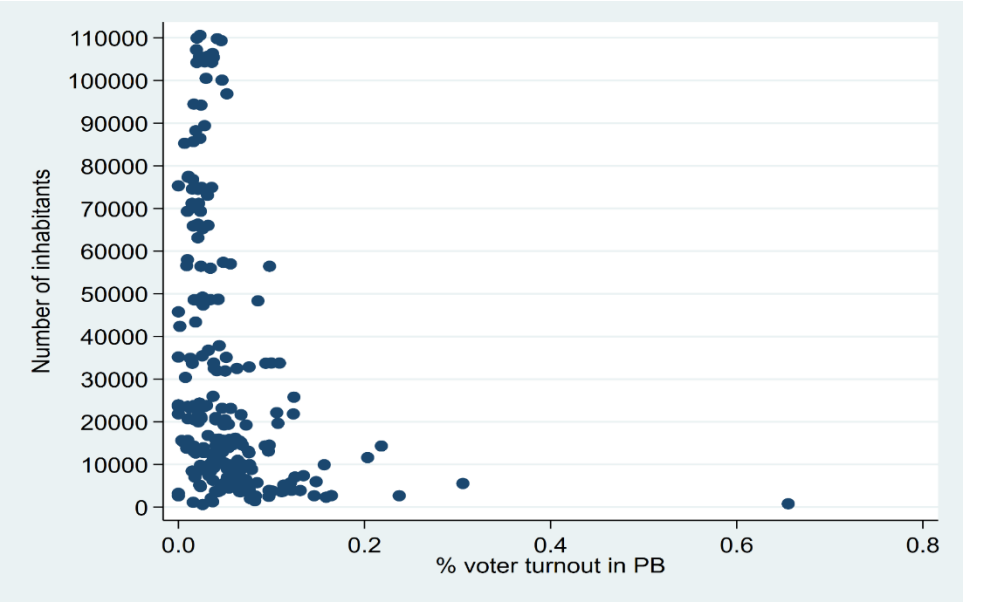



Source: Authors' own, 2023

When the relationship between the size of municipalities (measured by the number of inhabitants) and the voter turnout in PB was examined (Figure 4), we omitted both the municipalities where the voting was cancelled and the city Brno to avoid distorting the results. The voter turnout in PB was computed as the share of the number of PB voters relative to the number of all potential voters listed for the last Czech municipal election in 2018. We see a similar trend because, in Figure 3, the size of municipalities is different when voter turnout is less than 7%. However, only municipalities with less than 60,000 inhabitants are present in the sample with PB voter turnout of over 10%, and two municipalities with the highest PB voter turnout of over 20% are some of the smallest with less than 20,000 inhabitants.

**Figure 4:**

Number of inhabitants and voter turnout in PB from 2014–2021




Source: Authors' own, 2023

The number of submitted proposals for PB projects increased to approximately 1,000 in 2019. Approximately 3,000 proposals were proposed by citizens in municipalities implementing PB from 2016-2019.

## 5. Results and discussion

For every key criterion (1–4), each PB was identified as upgrading, downgrading, or stable. Based on hypotheses 1 and 2, the numbers of PB cases in abandoned and ongoing subgroups reflect the fate of the process in the following year (2019 for the first period and 2020 for the second one).

For 2017-2018, there is no example of the PB budget decrease, and 11 cases of PB were stable. In the group of upgrading PBs based on criterion 1, only one PB was terminated (Krnov). The presented reason for the cancellation was the low interest of citizens in proposing PB projects when only one PB project was submitted, and this situation did not comply with the criteria defined by the municipality. More than half of PB cases evaluated as stable based on the criterion 1 were terminated the following year. Evaluating the second criterion, the percentage of total municipal expenditures used for PB decreased in nine municipalities, from which 67% finished the PB in the

next period. 89% of PB cases were ongoing in the case of an increased share.

Seventy-eight percent of PB cases with lower voter turnout were abandoned the following year, and all PB cases with higher voter turnout continued. Citizens could perceive PB with low voter turnout as a process with less legitimacy, which is in line with Bhatnagar et al. (2003), Wampler (2012), and Zepic et al. (2017). However, there are opposing opinions—in one instance, a better quality of life in a municipality is positively associated with a higher voter turnout (Haman & Školník, 2020). The number of proposed projects seems less important as 44% of the PB cases were abandoned when the number decreased, but 47% of the PB cases with increased numbers did not continue.

For 2018-2019, it was more complicated to evaluate the fate of PB because of the COVID-19 pandemic in 2020. Three municipalities changed the PB to a two-year cycle (Ostrava Poruba, Chomutov, and Praha 11) and postponed the start of PB in one year, but the process was not finished. The stated reasons for the prolonged process were uncertainty and caution, mainly due to additional unexpected costs and the potential decrease in municipal revenues. One municipality (Mnichovice) shifted voting to an undefined date due to COVID-19.

An increased budget for PB could signal the municipality's interest in PB and, thus, a higher probability of its continuation (Boulding & Wampler, 2010; McNulty, 2012; Pape & Lerner, 2016). This suggestion was confirmed in this period when all PB cases identified as upgrading based on criterion 1 were ongoing. However, two stable PB cases were terminated in 2020, which is in line with our assumption based on the previous period's results (2017–2018) that criterion 1 alone is not applicable. Relating to the percentage of expenditure (criterion 2), one-third of downgrading PB cases were abandoned in 2020. However, to be more precise, 67% of downgrading PB cases were not realised in 2020, including two postponed PB cases not displayed in Table 2. PB cases with a higher percentage PB amount continued in all cases. Overall, 100% of upgrading PBs based on criteria 1 and 2 continued in the following year.

Based on a decreased PB voter turnout, only one downgrading PB was abandoned, but three were postponed. For this reason, the question arises whether a lower participation rate in the voting phase of PB could be one of the reasons for the postponement, apart from the COVID-19 situation.

When evaluating the number of projects, the situation was similar to 2017–2018 for downgrading PB when only 25% of the PB cases with fewer proposed projects were abandoned. Nevertheless, all upgrading PB cases were ongoing in 2020, which contrasts with 2017–2018. Unfortunately, only three cases were present, which could limit the relevancy of this tendency.

Subsequently, we tested hypotheses 1 and 2 for the whole period (2017–2020), and the results of this analysis are presented in Table 1.

**Table 1:**

Classification of PB cases based on key criteria from 2017-2019

| | ***PB budget*** | ***PB amount in %*** | ***PB voter turnout*** | ***Proposals*** |
|---|---|---|---|---|
| **downgrading** | 1 | 15 | 17 | 15 |
| abandoned | 0 | 8 | 8 | 6 |
| % of abandoned | N/A | 53.3 | 47.1 | 40 |
| **upgrading** | 12 | 15 | 13 | 11 |
| ongoing | 11 | 14 | 12 | 8 |
| % of ongoing | 91.7 | 93.3 | 92.3 | 72.7 |
| H1 | N/A | confirmed | not confirmed | not confirmed |
| H2 | confirmed | confirmed | confirmed | Confirmed |

Source: Authors' own, 2023

The results indicate that a PB identified as downgrading has a higher probability of being terminated based on the evaluation of criterion 2. In other words, a decrease in the amount for PB projects as a percentage of total municipal expenditures compared to the previous year increased the probability that the PB would be abandoned. Hypothesis 1 (H1) was only confirmed for criterion 2. In the case of other criteria, H1 was not confirmed, or it was not possible to confirm it due to a lack of cases (criterion 1). However, 47.1% were abandoned in the group of downgrading PB cases based on criterion 3 (PB voter turnout), which is close to the 50% limit for the evaluation. This criterion does seem to be relevant and needs further investigation. The diminishing activity of citizens in proposing PB projects does not prove to be relevant in determining the fate of PB with less than 50% of abandoned PB cases.

H2 was confirmed for all criteria evaluated as upgraded; there was a growth in the amount of the budget for PB projects, the amount for PB projects as a percentage of total municipal expenditures, voter turnout in PB and the number of proposals compared to the previous year increased the probability that the PB will be ongoing.

Fortunately, the evaluation of key criteria in two different periods (2017–2018, 2018–2019) and the continued PB processes in the following two years (2019 and 2020) was only partly distorted by the COVID-19 pandemic in the Czech Republic. Czech PB projects were mainly not cancelled or interrupted in 2020, contrasting with the dramatic drop in PB implementation in, e.g. the neighbouring Slovakia. PB processes that changed to a biannual cycle due to the uncertainty and caution of some municipalities were considered in the analysis.

The results in the follow-up period, including the years influenced by the situation connected to COVID-19 (2020 and 2021), are in the table 2. There is evidence that the outcomes for the key criteria are similar to the results in the previously examined period, even in this exceptional situation.

**Table 2:**

Classification of PB cases based on key criteria from 2019-2021

| | ***PB budget*** | ***PB amount in %*** | ***PB voter turnout*** | ***Proposals*** |
|---|---|---|---|---|
| **downgrading** | 11 | 32 | 25 | 36 |
| abandoned | 2 | 4 | 5 | 7 |
| % of abandoned | 18.2 | 12.5 | 20 | 19.4 |
| **upgrading** | 16 | 24 | 38 | 26 |
| ongoing | 16 | 19 | 34 | 25 |
| % of ongoing | 100 | 79.2 | 89.5 | 96.2 |
| H1 | not confirmed | not confirmed | not confirmed | not confirmed |
| H2 | confirmed | confirmed | confirmed | confirmed |

Source: Authors' own, 2023

For downgrading criteria, less than 50% of PB was abandoned. H1 was not confirmed for all criteria, with less than 20% of abandoned cases of PB in the following year. On the other hand, key criteria that were upgraded are associated with a higher probability of being ongoing (79.2-100%).

**Table 3:**

Classification of PB cases based on key criteria from 2017-2021

| | ***PB budget*** | ***PB amount in %*** | ***PB voter turnout*** | ***Proposals*** |
|---|---|---|---|---|
| **downgrading** | 12 | 47 | 42 | 51 |
| abandoned | 2 | 12 | 13 | 13 |
| % of abandoned | 16,7 | 25.5 | 31 | 25.5 |
| **upgrading** | 12 | 15 | 13 | 11 |
| ongoing | 11 | 14 | 12 | 8 |
| % of ongoing | 96.4 | 84.6 | 90.2 | 89.2 |
| H1 | not confirmed | not confirmed | not confirmed | not confirmed |
| H2 | confirmed | confirmed | confirmed | confirmed |

Source: Authors' own, 2023

The results for the whole period 2017-2021 are presented in Table 3 and are in line with the trends for upgrading/downgrading criteria for both analysed periods. There are 16.7-31% of cases with downgrading key criteria that were abandoned in the following year, which is less than the 50% set as a threshold for the hypothesis evaluation. The majority of cases with upgrading criteria (84.6-96.4%) are ongoing in the next period.

In this context, all four upgraded criteria could indicate a promising PB, and two confirmed downgraded criteria could help determine those PB cases with a higher risk of abandonment in the next period. These criteria are suitable for project-oriented PB that are often present in the EU, mainly in the CEE countries (Bednarska-Olejniczak et al., 2020; Džinić et al., 2016; Kukučková & Bakoš, 2019), and also prevail in Canada and the U.S.A. (Calabrese et al., 2020; Carroll et al., 2016; Lerner & Secondo, 2012; Pape & Lerner, 2016). The benefit of using simple criteria is its ability to be modified by adding other criteria that could be country-specific based on the differences in the key characteristics of ideal procedural ideal types of PB (Cabannes, 2004; Sintomer et al., 2008, 2010). Our proposed criteria could be used as a concept to evaluate the continuation of a PB with possible alterations.

## 6. Conclusion

Based on the available literature and knowledge about PB, the main factors of continuing or terminating a PB were identified and systematised. These factors can be divided into external and internal. Internal factors relate to a PB and its design/rules, administered by a municipality and its officials, and can be better controlled and influenced than external factors. Assuming the identification of factors in continuing or terminating a PB process, simple key criteria were developed to determine the fate of PB in the future. The identified internal drawbacks to the continuation of a PB could become apparent due to the reduction in the interest of two groups of stakeholders and the selection of key criteria expressing the changing interest of these two groups: politicians (criteria 1 and 2) and citizens as potential voters (criterion 3) and proposers of PB projects (criterion 4).

A PB case with all proposed criteria determined as upgraded (the budget for PB projects, amount for PB projects as a percentage of total municipal expenditures, voter turnout for PB and the number of proposals) is associated with a higher probability that PB will be ongoing. The results indicate the relevance of the proposed criteria to detecting the probability that a previous PB would continue is higher than 50% in the whole period.

The downgrading development of key criteria could be a warning signal that motivates municipalities to take measures to avoid terminating a PB or could be helpful for municipalities considering the modification of rules for PB in the next period. However, there is a probability lower than 30% that the process will be terminated. The results are the same during the extraordinary situation of the COVID-19 pandemic.

In the case of new governance after an electoral change, using the criteria could help clarify the actual situation regarding the interest of stakeholders in PB. The next stage of the research might be to verify the results and suitability of the proposed key criteria on data from other countries with project-oriented PB for a more extended period.

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# Reorganising Local Public Utilities: Where and Why We Can Argue for the Remunicipalization Trends?

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**Abstract:**

The paper is based on the use of evidence to scrutinise the effect of the Public-Private Partnership Act on the local public utility providers, where the context of the water and wastewater sector in Slovenia serves as an example. The Act affected the legal status of public enterprises, where solely public ownership was prescribed, and therefore demanded the reorganisation of existing public enterprises. The paper aims to evaluate the reorganisation process and the trend of remunicipalisation, the motives of reorganisation (political, pragmatic or transformative) and the advantages and disadvantages of the reorganisation process. A detailed, structured online questionnaire was designed and pretested for primary data collection to reach these aims. The questionnaire was sent to the Slovenian local public utility providers in water and wastewater management. The data was collated from 2018 to 2020. It was used in the analysis to provide evidence about the outcomes of the reorganisation process. The results show that new legislation contributed to increased public ownership in local public utility provision. The results also reveal that pragmatic motivating factors contributed to increased municipal buying out of private investors from (public) enterprises. The reorganisation process led municipalities into remunicipalisation, meaning that full municipal ownership and control increased.

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local public utilities, public enterprise, remunicipalisation, water and wastewater management

## 1. Introduction

In line with EU legislation, a certain degree of competitiveness should exist in public utilities. Many authorities have tried to introduce policies that enhance competitiveness in public utilities. However, the question has always been raised whether providing public utilities through public or private providers leads to greater efficiency. The trend to privatise public enterprises also leaves the question of efficiency in the private sector open. Although EU directives do not explicitly dictate the privatisation of public enterprises, they nevertheless seek to liberalise public services, which, of course, signifies a more significant role for the private sector and a change in the ownership of public enterprises (Aulich, 2011, p. 250; Bognetti & Obermann, 2012; Greiling & Grüb, 2014, p. 209; Lane, 2002, p. 60). This trend has influenced the transformation of existing traditional public enterprises across Western Europe at various times and produced various forms of institutional frameworks of the transformed public enterprises. Most existing public enterprises were transformed into joint-stock companies, which today represent the basic form of a public enterprise, with the share of public ownership ranging from minority to total ownership (Lane, 2002, pp. 60–61).

The EU and national governments have emphasised and strengthened local-level service provision, primarily through environmental protection and renewable energy policies and measures. Dissatisfaction with the outcomes of privatisation has led to a reappraisal of the state and the public sector in the role of rectifying and remedying the shortcomings and failures connected with the market and private sector (Wollmann, 2018, p. 421). The trend has turned to reverse privatisation or remunicipalisation, as municipalities started to take the provision of local public services back into their own hands (Gradus & Budding, 2018, pp. 2–3; Gradus, Schoute & Budding, 2019, p. 1; McDonald, 2018b, p. 61; Wollmann, 2018, pp. 426). These shifts over time show that privatisation and contracting out are important phenomena and that remunicipalisation has become increasingly important (Gradus & Budding, 2018, p. 2).

Even though remunicipalisation is observed in numerous countries, there is a need for extensive research in the area to understand better the phenomenon, including the factors behind this trend, together with its strengths and weaknesses. Therefore, the paper aims to identify the outcomes of the reorganisation process of the local public utility providers in Slovenia, which was legalised with the adoption of the Public-Private Partnership Act (PPPA) in 2006. As the focus of the study is to perform outcome as well as impact evaluation, we seek to portray the experience with the remunicipalisation of local public utilities in the water and wastewater management field. The purpose of the paper is to define the changes in the ownership structure after the adoption of new

legislation (whether the municipal ownership has increased, which strengthened remunicipalisation trends), to elaborate on the major potential motivations that might have guided municipalities in buying the ownership shares (whether the motives are political, transformative or pragmatic), to detect the major advantages and disadvantages of the reorganisation process and to obtain the opinion whether new legislation and consequent reorganisation process influence the business performance of the existing public enterprises. In this context, the paper tries to answer three research questions: (1) Has the PPPA caused the reorganisation of existing public enterprises, increasing the presence of public ownership? (2) What were the most important motives for the changes in public ownership and were they primarily pragmatic or transformative? and (3) What are considered the most important advantages and disadvantages of the reorganisation process from the perspective of public enterprises? The answers to the posed research questions will contribute to the knowledge of whether the ownership reorganisation process has increased remunicipalisation in Slovenia and whether remunicipalisation has been transformative (politically oriented) or pragmatic (cost efficiency oriented). The theoretical foundations for these research questions are presented in the next section.

## 2. Theoretical background and literature review

Intense debate over the positive and negative effects of private participation in local public services continues. The findings by Soukopová et al. (2018) indicate that externalising services to private contractors face different problems, usually limited market competition and limited quality of contract management. Also, a meta-analysis by Bel et al. (2010) finds no systematic support for private service provision leading to cost reductions. On the other hand, Carvalho et al. (2012), in their meta-analysis determine that publicly owned utilities are more likely to suffer from diseconomies of scale and scope than privately owned ones. Opponents of privatisation defend public management as the best way of assuring universal access to public services and preventing abuse by private companies of their dominant position in a natural monopoly (González-Gómez et al., 2014, pp. 1–3). Also, providing, commissioning, and organising public services should remain as close as possible to the needs of the users (Wollmann, 2018, p. 421–422). Therefore, alternatives such as inter-municipal cooperation (Agiamoh, 2021; Meričková et al., 2022), remunicipalisation, and municipality-owned firms tended to be promoted (Gradus et al., 2019, p. 1). Remunicipalisation is described in different terms: de-privatisation, reclaiming public services, taking services back into public hands, and in-sourcing (McDonald, 2018b, p. 61). With remunicipalisation, municipalities strive to achieve greater municipal democracy and autonomy. Public ownership can benefit local communities, by lowering consumer costs, providing more access for underserved populations and providing social services, and the like. Further, public ownership can support economic

development, provide jobs, and enhance local control and participation in economic decision-making (Berlo et al., 2016, p. 1; Hanna, 2019, p. 45–46). As Kishimoto and Petitjean (2017) conclude the report of a major study on remunicipalisation, the remunicipalisation process reclaims and reinvents public services aiming to respond to common social and environmental challenges.

The literature review on remunicipalisation as a trend provides insight into the various driving factors behind remunicipalisation. Usually, remunicipalisation is intentional and is affected by ending the contract with a private provider prematurely or by not renewing the arrangement after it expires. Such remunicipalisation is often a consequence of dissatisfaction with a private provider, the outcomes of privatisation, and failures in private contracting. Many authors (Bel, 2020; Busshardt, 2014; Clifton et al., 2019; McDonald, 2018a; Lindholst, 2019; Ulmer & Gerlak, 2019; Valdovinos, 2012) point to disappointment with privatisation as the main driving factor for remunicipalisation. Bel (2020), Valdovinos (2012), Nissan et al. (2004) show that corruption is one of the chief failures cited under private management, followed by overpricing, rising contractual and transaction costs, and financial failures (Bel, 2020; Clifton et al., 2019; Busshardt, 2014; Ulmer & Gerlak, 2019; Valdovinos, 2012), which are other important reasons behind the failure of private provision, together with deteriorating quality of service, public mistrust of private providers, and operative failures (Clifton et al., 2019; Lindholst, 2019; Valdovinos, 2012, Ulmer & Gerlak, 2019).

Remunicipalisation is also driven by the high costs of regulating and monitoring service providers, short-term contracts, diminished efficiency gains or, on the other hand, due to insufficient private-sector bidders for a contract. Private firms may also be unwilling to bid on what they see as unprofitable contracts, or may end contracts early (McDonald, 2018b, p. 62). Municipalities must also contend with costly teams of lawyers and bureaucrats required for contracting out, which reduces or reverses potential efficiency gains. Naturally, remunicipalisation is often opposed by private providers, who may employ various strategies to maintain their position and to delay the process of remunicipalisation (Berlo et al., 2016, p. 1; McDonald, 2018b, p. 62). Some authors argue that remunicipalisation blurs political intervention (McDonald, 2018b), expresses alternative political thinking, and transforms and socially empowers politics (Cumbers & Becker, 2018) to favour or strengthen local politics (Berlo et al., 2016). In contrast, remunicipalisation is also seen as an opportunity to enhance municipal and citizen influence and re-politicise urban utilities, which contributes to post-neoliberal urban governance (Becker et al., 2015); or as an opportunity to make policy in line with or beyond the norms of neo-liberal urban governance (Beveridge et al., 2014). Further on, Albalate & Bel (2020) conclude that politicians do not favour private service delivery as do bureaucrats. Gradus & Budding (2018) found that corporatisation is usually not particularly political. Voorn et al. (2020) conclude that remunicipalisation is not an ideologically oriented trend, as cost savings are a far more important factor than political ideology.

At this point, remunicipalisation is classified into two categories: pragmatic and

transformative remunicipalisation (Clifton et al., 2021; Voorn, 2021). Within the framework of the New Public Service Model, which, in particular, stresses democratic governance and citizen engagement (Denhardt & Denhardt, 2011), Voorn (2021) analyses political transformative and pragmatic variables as motivating factors for remunicipalisation. Pragmatic motives are traditional, connected to cost savings and efficiency, while transformative variables are political motives. He concludes that political motives are usually the proximate cause of remunicipalisation, while pragmatic motives are the ultimate cause. Similarly, a study by Clifton et al. (2021) confirms that remunicipalisation is primarily a pragmatic process, which happens due to privatisation failure, where local government consequentially terminates a contract or does not renew the contract when they strive to reduce transaction costs, and ensure service quality and costs savings. The study by Warner and Aldag (2019) also shows that remunicipalisation is primarily driven by pragmatic reasons (service quality, cost savings, efficiency) rather than political pressures.

On the other hand, Cumbers and Paul (2021) recognise remunicipalisation as a process of transformative political and social relations. Last but not least, Denhardt and Denhardt (2000, 2015) present the characteristics of the New Public Service Model, which are focused on democracy, citizenship and social equity. However, the principles of New Public Service Model are not found as a dominant paradigm in practice.

Municipalities have proceeded towards remunicipalisation either by repurchasing shares previously sold to private companies or by insourcing previously outsourced services. When the concession expires, municipalities decide for remunicipalisation as an opportunity to bring services back in-house without bearing any transaction costs. When the concession has not yet expired, possible compensations to private providers are an issue preventing earlier termination of the contract (Beveridge et al., 2014, p. 68; Hall et al., 2013, p. 206; Wollmann, 2018, p. 422). The negotiation process surrounding compensation is one of the key elements a municipality must consider when opting for remunicipalisation. Beyond the negotiation process, user involvement is also a key element, as it is fundamental for evaluating the private provider's performance and the benefits and risks of returning to public provision.

Nevertheless, the remunicipalisation process can vary according to the local context, the condition of public service, the involvement of the local government, the duration of the contract, the degree of private participation and the like. (Valdovinos, 2012, pp. 115–116). Nevertheless, most European studies on remunicipalisation focus on Germany, France, and Spain (Voorn et al., 2020). The remunicipalisation trend has mainly accelerated since 2010 (McDonald, 2018a), and water, waste disposal and energy sectors are mainly at focus (Busshardt, 2014; Voorn et al., 2020). Kishimoto and Petitjean (2017) also expose Germany and France as countries with the most profound trend of remunicipalisation, Germany mainly in the energy sector and France in the water sector. Although it is a widespread phenomenon (McDonald, 2018a), it is less commonly analysed in Central and Eastern European (CEE) countries with the exception of the study by Soukopová et al. (2022), which analyses the Czech Republic

and detects a possible beginning trend towards remunicipalisation in waste management. Our study aims at filling the gap in missing evidence for CEE countries by focusing on the Slovenian water utilities.

## 3. Methodology

### 3.1 Context of the study

European Directive 2006/111/EC on the transparency of financial relations between member states and public enterprises has affected the legal definition of a public enterprise in the individual EU member states, and it also contributed to the clarification of the legal status and definition of public enterprise (Trpin, 2007). Transparency of Financial Relations and the Separate Record of Various Activities Act was adopted in Slovenia in 2007 (Official Gazette of the Republic of Slovenia, No. 53/2007, 65/2008) based on this directive, which significantly changed the definition of the concept of public enterprise. Public enterprise was defined broadly, representing any enterprise over which the public authorities may exert a dominant influence (Brezovnik, 2009, p. 182; Trpin, 2007, pp. 6–7).

Slovenia adopted PPPA in 2006 (Official Gazette of the Republic of Slovenia, No. 127/06). Therefore, the rules for awarding works and service concessions were set per the EU Green Paper and EU Directive 2004/18/EC (Hrovatin, 2010, p. 95). Service concession arrangements had to follow also EU court practice in terms of the principles of the Treaty on the Functioning of the European Union (Burnik, 2017). Thus, the legislative solutions of the European Court practice were simultaneously integrated into PPPA, for example, the Stadt Halle case and the Teckal case, which ruled that only fully publicly owned enterprises can gain a concession without a tender and can be treated as an in-house operation. The Stadt Halle case explains that even a minority private shareholding makes it impossible for an entity to be treated as an in-house operator. The Teckal case explains that a contracting body (local authority) can assign a task without a competitive tendering to a third party when it can exercise control over that third party as it does over its own departments (an in-house entity). However, in the Parking Brixen case, the European Court ruled that an organisation, even with full municipal ownership, cannot be treated as an in-house entity when this organisation also carries out marketing activities (Šen Kreže, 2009).

Before the adoption of PPPA, the inclusion of the private sector in the traditional public sphere of public services was allowed by the Services of General Economic Interest Act (ZGJS, Official Gazette of RS, No. 32/93 and 30/98) for the provision of commercial (economic) public services used in the form of concessionary relationships and in the form of capital investment in the activities of private law; and by the Institutions Act, which has allowed awarding concessions for non-commercial public services provision (*Institute for Public-Private Partnership*, 2017). According to the Services of General Economic Interest Act, a public enterprise did not have its own

status, and could also have, as a commercial company, shared ownership. Therefore, the status of a public enterprise did not differentiate it from commercial companies. However, PPPA had considerable implications for the legal status of public enterprises, as they stipulate public enterprises need to be in full public ownership, and only fully publicly owned enterprises have a guaranteed concession without a public tender (Hrovatin, 2010, p. 102-104). PPPA also regulates the awarding of concessions to public enterprises, which are transformed into commercial companies. First, the founder shall award concessions without public tender to those commercial companies that were created out of public enterprises by withdrawing all private ownership shares. Second, public enterprises transformed into the legal status of private commercial companies must obtain a concession in compliance with the legislation. The concession should be awarded within one year by the founder of the enterprise through a bidding process on a public tender (Brezovnik, 2010, p. 24; Trpin, 2007, p. 6). To sum up, PPPA demanded the reorganisation of public enterprises with mixed ownership and awarded concessions to public enterprises that had transformed into commercial companies on a competitive basis.

### 3.2 Research design

We apply the positive approach to answer the research questions stated in the Introduction by using the survey results analysing ownership reorganisation of Slovenian public enterprises in water and wastewater management. The questionnaire is based on the literature review – content analysis (Petkovšek et al., 2021) which analyses the types of delivery mechanisms (in-house provision, private provision and inter-municipal cooperation) and the motives, factors influencing the local public services delivery mechanisms (the type, costs, economies of scale, efficiency, economic-political factors, economic-institutional-social factors and other economic factors, e.g. fiscal conditions, poverty, quality, corporatisation, competitive/non-competitive service markets, local stress, and the like), based on empirical and non-empirical country and cross-country studies from Europe and the USA. The questionnaire was pre-tested to gain an expert opinion on the relevance of the content and amended to account for country-specificities. The survey was conducted online by sending an email to the managing directors of all Slovenian public enterprises in water and wastewater management. The online questionnaire comprises a total of 102 questions.

The questionnaire covers five thematic parts, combining open-ended questions, multiple-choice answers, and a Likert scale of 1–5. We chose to use a Likert 5-point scale as it provides better quality data compared to a 7- or 11-point scale (Révilla et al., 2014). The first thematic part covers the primary respondent data, and the second is the provision of public utilities in drinking water supply and wastewater treatment, aiming to collate information on the public enterprise's legal status and on the range of their mandatory local public utility provision. The third part covers the ownership structure of the public utilities before adopting the new legislation, and the fourth part covers the changes resulting from the reorganisation of existing public enterprises and compliance

with the new act. The third and fourth parts aim to gain insight into the reorganisation process and its outcomes and serve to provide answers to elaborate on the major potential motivations that may have moved municipalities to buy shares in the mixed ownership enterprises, which was a necessary condition for the transformation of utilities into (pure) public enterprises. We were also interested in how concessions were obtained and the possible advantages and disadvantages brought about by the reorganisation, including the impact on the business performance of the existing public enterprises. The fifth part covers the setting of prices by the utilities. Due to the comprehensiveness of the questionnaire, we prolonged the surveying period to two years from 2018 to 2020, to increase the response rate. The collection time of two years did not affect the authenticity and comparability of the data among the respondents, as a specific focus was placed on the collection of answers related to past events. The study intended to explore the compliance of the reorganisation process with the new legislation and how the local public utility providers experienced the reorganisation. The survey results serve as an input for addressing our research questions based on the theoretical premises presented in section 2.

### 3.3 Research population

The study includes all public enterprises in water and wastewater management in Slovenia, more specifically, public enterprises providing drinking water supply, sewage and wastewater discharges and urban wastewater and sewage treatment. The small size of the country and the number of utilities ensured that we sent the questionnaire to all public enterprises in the water industry. The total population includes 72 public enterprises, of which 55 provide both drinking water and wastewater treatment, 11 wastewater treatment only and 6 drinking water treatment only.

**Table 1:**

Research population

| ***Public enterprises*** | ***Number*** | ***Share of the total population (%)*** |
|---|---|---|
| Research population total | 72 | 100 |
| Provision of water and wastewater treatment | 55 | 76.39 |
| Provision of water treatment | 6 | 8.33 |
| Provision of wastewater treatment | 11 | 15.28 |
| Total no of responses | 30 | 41.67 |
| No of (almost) completed surveys | 21 | 29.17 |
| No of incomplete surveys | 9 | 12.5 |

Source: Authors' calculations, 2023.

In total 30 public enterprises (41.67% of the total population) responded to the

online questionnaire, but only 21 public enterprises fully completed the survey (Table 1). The actual response rate to all questions in the survey is 29.17%, which could be considered sufficient to enable the generalisation of results for the whole country. The reason for the incomplete response rate might be attributed to the fact that the questionnaire is rather lengthy since it is aimed towards a detailed evaluation of the reorganisation process and its outcomes. The data analysis and results, which are presented in the following sections, consider all responses, from partly completed to fully completed questionnaires, therefore the total number of responses differs in the tables. Regarding the responses to the parts of the surveys, the first part (basic information of utilities), was fully answered by all firms, which is expected as the questions were relatively easy to answer. The questions in the other parts of the questionnaire were answered by a lower number of utilities, around 75% of all. This is not surprising because questions in those parts were more specific and required the respondents to search for the data or to verify the answers for example in their accounting office, which needed more of their time and effort.

## 4. Results and discussion

PPPA demanded the reorganisation of existing public enterprises with private equity stakes. On the one hand, the status of public enterprise can be retained with the transfer of the private ownership part to municipalities, and on the other hand, the public enterprise can be transformed into a commercial company per the Companies Act.

**Table 2:**

Ownership of public enterprises before and after PPPA

| *Ownership* | *Ownership before PPPA* | | *Ownership after PPPA* | |
|---|---|---|---|---|
| | *No of utilities* | *Share of utilities (%)* | *No of utilities* | *Share of utilities (%)* |
| **100% public** | 17 | 77.27 | 21 | 91.3 |
| **Mixed** | 5 | 22.73 | 2 | 8.7 |
| **Private** | 0 | 0 | 0 | 0 |
| | N=22 | | N=23 | |

Source: Authors' calculations, 2023.

Table 2 shows that most of those public enterprises that responded (77%) already had full public (municipal) ownership before adopting PPPA and retained their legal

status of public enterprise after adopting new legislation. After adopting PPPA, the share of full public ownership rose to 91%, showing that in the process of reorganisation some enterprises with mixed ownership transformed into fully publicly owned entities. Before adopting PPPA, mixed public enterprises represented almost 23% of all existing public enterprises; after adopting the new legislation their share fell to 8.7%. Respondents with full municipal ownership also provided information on whether retention or change in ownership structure was a consequence of adopting PPPA. Some 30% of respondent public enterprises confirmed that PPPA affected the decision on ownership. Roughly 60% of public enterprises did not have this information, and some (approximately 10%) stated that full municipal ownership was never in question, regardless of the new legislation. The ownership structure of retained mixed public enterprises did not change much after adopting PPPA. The average public share decreased from 66% to 59%, and the average private share increased from 34% to 42%. We may assume that retention of mixed ownership was due to the inability of a municipality to secure funds for the purchase of ownership shares and to the (dis)interest of owners and employees.

The changes in the legislation that came with adopting PPPA and harmonising the Slovenian Accounting Standard (SAS) with the International Financial Reporting Standards demanded the transfer of public infrastructure into municipal ownership. As a result, the relationship between the public infrastructure owner (the municipality) and the infrastructure manager (the public enterprise) had to be regulated, in the case of full municipal ownership of a public enterprise, by the end of 2009 (Ministrstvo za finance Republike Slovenije, 2009). The following possibilities for control over infrastructure before PPPA were as follows:

1. Transfer of public infrastructure to a controlling public utility provider
2. Transfer of public infrastructure to a public utility provider in lease or maintenance
3. Transfer of public infrastructure to a public utility provider as a non-cash contribution into the public enterprise

Research by Kavčič et al. (2002, p. 41) revealed that the most common form of regulation of public infrastructure ownership between the municipalities and the public utility providers before PPPA and before the harmonisation of SAS was the transfer of public infrastructure to public utility provider in control.

After PPPA and the harmonisation of SAS, municipalities had three options for transferring infrastructure to a public enterprise (the infrastructure manager). One option was to transfer it into the ownership of a public utility provider (public enterprise), while the other two options involved the lease of it – either in the form of a financial or business lease. Following the recommendation of the Slovenian Ministry of Finance, most of the municipalities decided on a business lease. In this case, PPPA allows for the direct conclusion of a contract with the public enterprise. In contrast, the financial lease requires many conditions, which are usually not fulfilled (Ministrstvo za finance Republike Slovenije, 2009).

**Table 3:**

The changes in ownership of public infrastructure

| ***Ownership of public infrastructure*** | ***Before PPPA*** | ***After PPPA*** | ***Relationship between the infrastructure owner and infrastructure manager after PPPA*** | |
|---|---|---|---|---|
| | ***Share of utilities (%)*** | ***Share of utilities (%)*** | **Share of utilities (%)** | |
| **Yes, full public enterprise ownership.** | 41.33 | | | |
| **No ownership.** | 58.67 | | | |
| **Transmission into full municipal ownership.** | | 72.66 | Ownership | 5.77 |
| | | | Financial lease | 15.47 |
| | | | Business lease | 78.76 |
| **No transmission.** | | 27.34 | | |
| | N=22 | N=20 | N=20 | |

Source: Authors' calculations, 2023.

Before PPPA, more than half of the respondent public enterprises (59%) did not own public infrastructure, while some 41% had full ownership of public infrastructure. There were no cases of mixed ownership of public infrastructure (Table 3). After PPPA, most of the respondent public enterprises (around 73%), which did not already have full municipal ownership of public infrastructure, transmitted the public infrastructure into municipal ownership to comply with the PPPA provisions. The remaining utilities (27%) stated that ownership of the public infrastructure was never in their domain and, thus, already owned by municipalities before PPPA. The table also reveals that after PPPA, the relationship was managed through the transfer of public infrastructure into a business lease of a public utility provider (79% - 83% of respondents for drinking water supply and 76.5% of respondents for sewage and wastewater discharges, and urban wastewater and sewage treatment). In less than 6% of cases, the relationship was managed through transfer into the ownership of a public utility provider, and in 15.5% of cases, through the transfer into the financial lease of a public utility provider. Overall, the results show that implementing PPPA contributed to increased public ownership in local public utility provision, confirming remunicipalisation trends.

The following, the drivers of remunicipalisation (poor private management, overpricing, rising contractual and transaction costs, deteriorating quality of service and the like), are closely connected to the motivating factors behind the reorganisation of local public utilities identified in our research. The results below list standard reasons for remunicipalisation in the field under investigation.

**Table 4:**

Motivating factors behind full municipal ownership of a public enterprise

| ***Motivating factor*** | ***Weighted average*** |
|---|---|
| Management problems in enterprises with mixed ownership | 4.3 |
| Simpler regulation of the provider | 4.0 |
| Greater control over the provider | 3.95 |
| More possibilities to influence business operations | 3.8 |
| Greater rationality and efficiency of business | 3.8 |
| To use in-house orders | 2.9 |
| Easier to obtain EU funds | 2.6 |
| To avoid public tenders for concessions | 2.45 |
| To prevent employee dismissal | 2.15 |
| N = 20 | |

Note: A Likert scale of 1–5 was used: 1 – I fully disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I fully agree.

Source: Authors' calculations, 2023.

The most important motive behind the transformation to full municipal ownership of a public utility appears to be management problems in a mixed-ownership enterprise, closely followed by more straightforward regulation of the service provider, greater control over the service provider, more possibilities to influence business activities, and more rational and efficient business activities (Table 4). In contrast, preventing employee dismissal and avoiding public tenders for concession are found to be the least important motives. We can assume that avoiding public tenders for concession was not seen as an important factor, given the small share of public utility provision via the awarding of concessions in general, and, more specifically, due to the even smaller share of provision via direct, horizontal concessions without a public tender. Public enterprises transformed into full public ownership have either retained the concession for the provision of a local public utility or vice versa, as the shares of both groups are slightly less than 50 % in both instances. The share of horizontal concessions is highest in the provision of drinking water supply, where 50% of respondent public enterprises have retained it. Only around 30% of respondent public enterprises have retained concession as a horizontal concession for the provision of sewage and wastewater discharges, and only around 15% of respondent enterprises for urban wastewater and sewage treatment. Public enterprises that have not retained the concession as a horizontal concession explained that the enterprise provides the public utility only for their municipality and that the concession is granted to a public enterprise with the ordinance of the individual municipality. To sum up, the evidence

portrays the prevalence of standard theoretical reasons for remunicipalisation. The reasons identified herein consist of management problems in a mixed-ownership enterprise, regulation of the service provider, control over the service provider, influencing the business activities, and more rational and efficient business activities.

Next, we turn to the analysis of both the advantages and disadvantages of the reorganisation process. Table 5 reveals that public enterprises perceive the municipality's ability to monitor the enterprise's business activities under the decree as the most important advantage of reorganisation, followed by the possibility of the municipality having full control over the performance of public utility providers.

**Table 5:**

Advantages of the reorganisation of public enterprises

| ***Advantage*** | ***Weighted average*** |
|---|---|
| The municipality monitors the business of the enterprise under the decree | 4.06 |
| The municipality has full control over the performance of public utility | 3.63 |
| Institutional, corporate, and governmental rights are prescribed by municipal decree | 3.5 |
| Better cooperation between the enterprise and the local community | 3.44 |
| Developing expertise and increasing the quality of the services provided | 3.13 |
| Better use of labour and capital | 2.75 |
| Better job performance | 2.63 |
| Better organisation of work | 2.63 |
| Lower costs of service provision / Lower transaction costs | 2.5 |
| Acquisition of additional municipal financial sources | 2.5 |
| Easier to obtain European funds | 2.44 |
| Lower labour costs | 2.31 |
| Total profit from a public enterprise is transferred to the budget and devoted to investment in infrastructure | 2.31 |
| N = 16 | |

Note: A Likert scale of 1–5 was used: 1 – I fully disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I fully agree.

Source: Authors' calculations, 2023.

In contrast, turning to potential disadvantages, some were identified but are perceived as less important, as the magnitudes are smaller. Table 6 reveals that utility providers perceive the most significant disadvantage in the arrangement of a concession relationship, which requires the regulation of many legal acts. Besides, they agree that regulatory pricing policy, higher costs for the utility provider due to municipal control, visible lack of experience of municipal control over the concessions and no possibility

of control over the concessionaire through founding and corporate rights also present disadvantages.

**Table 6:**

Disadvantages of the reorganisation of public enterprises

| ***Disadvantage*** | ***Weighted Average*** |
|---|---|
| The arrangement of a concession relationship requires the regulation of many legal acts | 3.75 |
| Regulatory pricing policy | 3.5 |
| Higher costs for the utility provider due to municipal control | 3.0 |
| The municipality does not have control over the concessionaire through founding and corporate rights | 3.0 |
| Lack of municipal experience in providing control over the concession in terms of maintaining the high quality of service for citizens, and maintaining and increasing the value of the property for the municipality at justifiable service prices | 3.0 |
| Higher transaction costs due to public tenders for concessions | 2.75 |
| Higher transaction costs for the municipality in terms of controlling the concessionaire | 2.75 |
| Higher public utility prices | 2.5 |
| Poorer quality of public utility | 2.5 |
| N = 13 | |

Note: A Likert scale of 1–5 was used: 1 – I fully disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I fully agree.

Source: Authors' calculations, 2023.

Even though the respondent public enterprises point to more rational and efficient business as an important advantage of the reorganisation process, they do not find any particularly essential changes in the effectiveness of their business after the reorganisation, as around two-thirds of them share the perception that their business performance has not deteriorated. The above may be connected to the fact that most public enterprises were already in full public ownership before the reorganisation process. As a result, the effectiveness and efficiency of the business remained relatively the same with reorganisation. To sum up, we might argue that the reorganisation process brought several advantages, the most important being the ability of municipalities to monitor the business activities of the enterprise under the decree. For the potential disadvantages, they could be more explicit. However, if put forward, the most important one might be portrayed as the arrangement of concession relationships, which requires the regulation of many legal acts.

The reorganisation process of public enterprises in the water industry in Slovenia contributed to increased municipal ownership in utility provision, thus providing evidence for the remunicipalisation trends in this industry, which corresponds to the

findings of Kishimoto and Petitjean (2017). Remunicipalisation brings benefits to both local communities and to the local population. The literature points out lower consumer costs, more access to services for deprived populations, more jobs and improved overall economic development, more local control over the provision of public utilities, financial gains for local authorities, and more empowered municipalities and local inhabitants (Becker et al., 2015; Hanna, 2019; Wollmann, 2018). These benefits of remunicipalisation can also be observed in our research.

The literature review on remunicipalisation suggests various pragmatic and transformative motives for bringing service provision back into the public sector (Clifton et al., 2021; Gradus & Budding, 2018; Gradus et al., 2019; McDonald, 2018b; Voorn, 2021; Wollmann, 2018). As remunicipalisation is usually intentional and is affected by terminating a contract with a private provider, the most frequently cited motive is dissatisfaction with the private provision or provider (Bel, 2020; Busshardt, 2014; Clifton et al., 2021; McDonald, 2018a; Lindholst, 2019; Ulmer & Gerlak, 2019; Valdovinos, 2012; Voorn, 2021), evidenced by poor private management, overpricing, increased contractual and transaction costs, financial failures, deteriorating quality of service, public mistrust, operative failures and the like, which all point to the pragmatic reasons for the remunicipalisation process. Similar pragmatic motives behind the decision to remunicipalise were also identified by our research, which aligns with other studies (i.e. Clifton et al., 2021; Voorn, 2021, and others). By identifying the pragmatic reasons as key drivers, our results also contrast the findings of some other studies (i.e. Cumbers & Paul, 2021) placing political transformative motives or those associated with the New Public Service Model (i.e. Denhardt & Denhardt, 2015) among primary reasons. As these are traditional reasons for remunicipalisation, we can argue that legal amendments in the form of the PPPA introduction have contributed to the trend towards remunicipalisation in the water industry in Slovenia, and not vice versa, as assumed by the policymakers when developing policies and (legal) regulations.

Literature highlights that remunicipalisation is driven by the high cost of monitoring, short-term contracts, deteriorating efficiency, insufficient private-sector bidders for a contract, and the like. (Berlo et al., 2016; McDonald, 2018b). Our research identified advantages of the reorganisation process, i.e. the municipality can monitor the business activities of the enterprise under the decree, the municipality has complete control over the performance of public utility providers; a municipal decree prescribes institutional, corporate, and governmental rights; better cooperation between the enterprise and the local community, and the like. Thus, we can find empirical support that the high costs of monitoring and regulating private contracts drive municipalities to remunicipalise (Bel, 2020; Busshardt, 2014; Clifton et al., 2019; Gradus & Budding, 2018; Gradus et al., 2019; Hanna, 2019; Ulmer & Gerlak, 2019; Valdovinos, 2012; Wollmann, 2018).

The literature review also points out that it is necessary to evaluate the private provider's performance and the benefits and risks of returning to public provision (Beveridge et al., 2014; Friedländer et al., 2021; Hall et al., Lobina & Terhorst 2013;

Valdovinos, 2012; Wollmann, 2018). According to the respondents in our research, the reorganisation process did not bring any essential changes to the effectiveness of the business. Thus, we can at least argue that we cannot support the assumption that remunicipalisation deteriorated performance.

## 5. Conclusion

Implementing PPPA in Slovenia led to increased public ownership of public utilities, naturally influencing the trend toward remunicipalisation in the water industry. Using primary data collection, we explored compliance of the reorganisation process with the new legislative provisions and the experiences of local public utility providers with this process. To address the research questions, we can argue that the reorganisation process increased (full) municipal ownership of public utilities in this industry, thus evidencing the trend towards remunicipalisation. The results also confirm the shift of public infrastructure to full municipal ownership, where the relationship between the infrastructure owner (municipality) and the infrastructure operator (public enterprise) is arranged through a business lease to the public utility provider. The motivating factors behind municipal ownership are confirmed as being pragmatic rather than transformative. They are justified in management problems, regulation of the service provider, control over the service provider, influence on the business activities, and more rational and efficient business activities. The advantages of the reorganisation process are seen in the potential ability of the municipality to monitor the enterprise's business activities under the decree and complete municipal control over the performance of the public utility. Even though we have confronted some obstacles and limiting factors in our empirical research, which were related to the complexity of the questionnaire at most, we were able to provide some valuable and unique empirical insights. The results also provide helpful information for municipalities, local public utility providers, and public policymakers when designing policies and regulations. Further research in other domains of public utilities would be highly warranted, both in the traditionally local utilities (e.g. waste management) and in the traditionally national utilities (energy sector and the like).

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# Procedural Challenges of Cross-border Cooperation and Consistency in Personal Data Protection in the EU

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**Abstract:**

Data protection is an increasingly important topic in the European administrative field at national and cross-border levels. Such a trend reflects different phenomena in contemporary society, which further leads to a more focused concern for a harmonised elaboration by the Member States despite their autonomy, in principle, regarding EU law implementation. However, as revealed by the Slovenian case in this article, the European Data Protection Board and national supervising authorities, mostly information commissioners, express the need to regulate some issues more decidedly. Interestingly, yet not surprisingly, their focus is on procedural aspects, as according to administrative science and several European Commission documents, procedure strongly influences the results. As a result, the article elaborates on the relevant procedural issues to be addressed to ensure a harmonised enforcement of the General Data Protection Regulation (GDPR) in force since 2018. Various research methods are employed, combining qualitative, normative, and comparative analyses and quantitative approaches, emphasising statistical data obtained from annual reports for 2020, 2021, and 2022. The results show a lack of procedural provisions in several aspects, including the definition of the parties to the procedure and their defence rights, particularly access to the file, to be heard, and complain, as well as one-stop-shop access to legal protection, deadlines, and investigation powers. Such gaps are expected to be covered by procedural institutions enshrined in National Administrative Procedure Acts (APA). However, as suggested by the Slovenian experience, such a solution is

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minimal due to differing national regulations and relatively low awareness of APA relevance in data protection even among supervising authorities. Hence, the authors argue that there is a need to develop and adopt standard EU rules to regulate such issues.

**Points for Practitioners:**

The article refers to data protection within theoretical, normative, practical, comparative, and national dimensions. In addition to analysing statistical data regarding procedural issues of cross-collaborative application of GDPR in the Member States – primarily Slovenia – the article provides practical implications of legislative, organisational, and IT adaptations required for harmonising EU-wide enforcement of GDPR. The insights provided herein can support the development of similar solutions in other EU countries. Therefore, the research findings are relevant for practitioners from various European administrations who are in charge of implementing GDPR and, specifically, supervising its implementation, as well as for policymakers and legislators in their respective areas of data protection and administrative procedural law. The findings will also benefit the European Commission when drafting new legislation to enhance cooperation and consistency between Member States in enforcing personal data rights set by GDPR.

**Keywords:**
administrative procedural law, cross-border cooperation and enforcement, EU law and national autonomy, GDPR, personal data protection

## 1. Introduction

Personal data protection is one of the pillars of European citizen empowerment and the EU approach to digital transition (European Commission, 2020; Rudolf & Kovač, 2022). Hence, it is one of the most important values enshrined in the highest EU acts, particularly Article 16 of the Treaty on the Functioning of the EU,[3] Article 39 of the Treaty on EU,[4] and Article 8 of the Charter of Fundamental Rights of the EU.[5] The EU acknowledged the importance of personal data protection by adopting the General Data Protection Regulation (GDPR[6]) in May 2016, directly applicable in all Member States and in force since May 2018.

3 EU Charter, Official Journal of the EU C 326/01, 26. 10. 2012.

4 EU Charter, Official Journal of the EU C 326/13, 26. 10. 2012.

5 EU Charter, Official Journal of the EU C 83/389, 30. 3. 2010.

6 Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), Official Journal of the EU L 119.

The main purpose of GDPR is threefold: (i) strengthen the fundamental human rights of individuals in the digital era (data protection intrinsically connected to information privacy), (ii) offer clarification and, in some way, a path to standardisation of the rules that companies and public bodies across all Member States (MSs) must comply with, and (iii) end the fragmentation of national systems as well as the administrative cues arising from fundamental human rights (Senatori, 2020, pp. 159–161; Kneuper, 2020, p. 258; Rudolf & Kovač, 2022). GDPR offers a new cooperation and consistency mechanism stipulated chiefly in Chapter 7 to achieve such a purpose. With the one-stop-shop (OSS) mechanism, this new approach to EU-wide enforcement of GDPR serves multiple purposes. First, it eases the administrative burden on the controllers[7] with a mechanism where instead of having to engage with every single personal data authority (SA) in each MS, a controller, when conducting its cross-border processing activity, dealing with only one Data Protection Authority (DPA). Second, it promotes and ensures a consistent application of personal data protection (PDP) rules and enforcement of GDPR by DPAs in every MS. However, not least, it provides individuals with enforceable PDP rights, no matter where in the EU they are located and to which DPA they announce their PDP breach (more in European Commission, 2020; cf. Harlow & Rawlings, 2014; Kuner at el., 2020).

The cooperation and consistency mechanism not only imply a *sui generis* approach to enforcing PDP rights throughout the EU but presents a complex issue of this mechanism serving its initial purpose due to the differences in administrative procedures and practices between MS SAs. As specified in the 2023 Commission's work plan (European Commission, 2022), the procedural issues of PDP rights enforcement, in particular, will be discussed and worked on in the following years to better ensure that the cooperation and consistency mechanism works as intended. However, it is important to consider that national administrative laws, specifically National Administrative Procedure Acts (APA), are also relevant in this context, at least *mutatis mutandis*, as in any administrative matter that involves common EU principles and specific operational procedural rules (Harlow & Rawlings, 2014; Galetta et al., 2015; Kovač, 2016).

The purpose of this article is to analyse the procedural aspects of the cross-border cooperation and consistency mechanism set by GDPR while exploring the procedural challenges that have either arisen in the practice of the SAs or have been deduced from the statements by the European Data Protection Board (EDPB) and the EC or from the relevant case law on PDP enforcement in the EU and in individual countries, with Slovenia selected as an example.

By focusing on the procedural issues and their regulation in the Republic of Slovenia as one of the MSs obliged to ensure the consistent application of GDPR, this

7 According to Article 4(7) of GDPR, a "*controller*" is the legal entity that, alone or jointly with others, determines the purposes and means of the processing of personal data. Conversely, Article 4(8) defines a "*processor*" as an entity that processes personal data on behalf of the controller. These roles are not merely semantic distinctions; they carry specific legal obligations and liabilities.

research aimed to answer the following research question: *Can national law (such as the national PDP act or APA in Slovenia) provide an excellent model to other countries and the EU regarding procedural regulation in the field of data protection to overcome the barriers to cross-border cooperation?* It was hypothesised that the current lack of EU-wide procedural regulation hinders the cooperation and consistency principles set by GDPR while also presuming that the national procedural regulation by the (G)APA only partially offers adequate answers and flexible solutions to procedural challenges.

The legal landscape of data protection has been a subject of extensive scholarly inquiry, particularly since the introduction of GDPR in the EU. Legal scholars and practitioners have delved into various facets of data protection law, ranging from the principles of consent (Utz et al., 2019; Hallinan, 2020; Bergemann, 2018) and transparency (Wulf & Seizov, 2022; Spagnuelo et al., 2019) to enforcement mechanisms (Ruohonen & Hjerppe, 2022; Gentile & Lynskey, 2022) and the role of DPAs (Puljak et al., 2023; Barnard-Wills et al., 2016; Giurgiu & Larsen, 2016). Notable contributions have also been made in understanding the interplay between national laws and GDPR (Molnár-Gábor et al., 2022; Wagner & Benecke, 2016), as well as GDPR's extraterritorial reach and its impact on international data transfers (Drechsler, 2023; Phillips, 2018; Goddard, 2017). However, one area that has received comparatively less attention is the procedural aspects of the OSS mechanism for cross-border data protection enforcement. In the context of the OSS procedure, scholars have explored issues such as whether the OSS provides legal certainty and legitimate expectations (Balboni et al., 2014), the extent of DPAs' powers and roles (Brandão, 2023), and the limitations of procedural data protection (Francis, 2023). Research has also been conducted on potential reforms to GDPR (Hofmann & Mustert, 2023), where the proposed solutions primarily focus on procedural harmonisation and strengthening the role of an independent DPA on the EU level in charge of taking on EU-wide cases while the reform should also focus on improving the allocation of powers between DPAs and ensuring individual procedural rights, thereby enhancing the overall quality and speed of decision-making.

## 2. The Methodological outline

The research carried out relies on an established research process structure, which implies the following phases: definition of the research problem and objectives, development of an analysis plan, collection and analysis of data, and interpretation of results (cf. Kovač & Rudolf, 2022). The definition of research objectives and the study of the relevant literature are followed by normative and dogmatic analysis and the definition of the primary research concepts, after which empirical and comparative insights into the subject are provided.

The research design is based mainly on the relevant scientific literature on data protection, privacy rights, administrative procedures, and MS autonomy, including

articles from scientific journals, monographs, commentaries to regulations, as well as various white papers, proposals and reports of relevant EU and national authorities, field administrative practice and case law. Therefore, the study aims to show the respective developments in cross-border procedural issues of data protection in the European context.

The topic is tackled from the perspectives of political science and administrative law; therefore, normative and dogmatic methods, analysis of scientific literature, sociological and historical analysis, and comparative and axiological methods are used. In order to overcome the complexity and multidisciplinary nature of the topic, as well as the dominantly qualitative nature of the research, the triangulation approach was applied to ensure scientific objectivity. The above means that any main study subject was examined with multiple methods and resources, particularly by combining literature and European white papers analyses and case law.

The main research methods applied were the normative method, with an analysis of EU regulations on administrative procedural law or rather the lack thereof, alongside the comparative method, analysing the specific procedural aspects of the EU-wide issues as mentioned above, specifically in Slovenia with its national APA and PDP act. For an empirical insight, a statistical analysis of the EDPB's and IC's annual reports for 2020, 2021 and 2022 was conducted, combined with an overview of relevant case law regarding the procedural challenges mentioned above and their potential solutions. Therefore, normative, descriptive and dogmatic methods were applied together with methods of content analysis and synthesis. Consequently, based on the research findings, general solutions to cross-border personal data rights enforcement and solutions to other already existing or future cross-border administrative procedures and sectors in general were discussed.

## 3. Framework of the selected procedural institutions for an efficient personal data protection

### 3.1 The role of the One-Stop-Shop mechanism in harmonizing data protection across the EU

One of the main objectives of GDPR was undoubtedly to provide a consistent approach and harmonisation of data protection rules at the EU level (van der Sloot, 2018). Aimed at bringing uniformity or at least harmonisation in how PDP rights are exercised and enforced throughout the MSs proves one of the most complex issues of such EU-wide protection. As stated in recital 7 of GDPR, those developments require a strong and more coherent data protection framework backed by strong enforcement, given the importance of creating trust that will allow the digital economy to develop across the internal market.[8] GDPR, therefore, calls for a robust and unified data protection

8 See Recitals 6 and 7 of GDPR, more in Kuner et al., 2020.

framework across all MSs, supported by consistent enforcement measures (cf. Kuner et al., 2020).

To align and facilitate the initial purpose of an EU-wide harmonised PDP, a so-called one-stop-shop mechanism (OSS) was introduced (more in Balboni et al., 2014). It establishes a single point of contact, allowing companies that operate in multiple MSs and conduct cross-border data processing to only work with one Data Protection Authority (DPA). Additionally, this mechanism empowers individuals to more effectively, at least in principle, assert their rights against these controllers. Since the OSS mechanism's primary purpose is to ensure the consistent application of GDPR throughout the EU, one could argue that whenever the enforcement of GDPR differed across MSs, the OSS mechanism could serve as a corrective of such divergence. In other words, the national legislation transposing GDPR into national frameworks may, of course, differ according to the specific national needs but should not deter from the material rights and obligations that GDPR provides for (cf. Balboni et al., 2014; Mali, 2019; CIPL, 2021; Access Now, 2022; EDPS, 2022). Under Article 60 of GDPR, enforcement is primarily led by the lead supervisory authority (LSA). The main task of the LSA is – under the umbrella of EDPB – to coordinate and work with other supervisory authorities, known as concerned supervisory authorities (CSAs), regarding specific PDP supervision. To facilitate consistency in their cooperation across the MSs regarding harmonised enforcement, consistency tools such as EDPB's opinions (Article 64), dispute resolution mechanism (Article 65), urgency procedure (Article 66), and exchange of information procedure (Article 67) could be activated when, as stated in recital 135, "*a supervisory authority intends to adopt a measure intended to produce legal effects as regards processing operations which substantially affect a significant number of data subjects in several Member States*". Furthermore, the consistency mechanism may be employed in response to a request by either the Commission or any relevant supervisory authority for the matter to be dealt with using the consistency mechanism.

The OSS mechanism is therefore intended for cases that are "*transnational*", i.e. cross-border processing cases[9] where the impact of such processing could impact more than just one MS citizen (Giurgiu et al., 2015). Consequently, two broad scenarios that could in practice intertwine when the OSS mechanism is initiated are established. First, when a company has at least two establishments in the EU, the supervisory authority of the main establishment shall be competent to act as LSA for the cross-border processing carried out by that controller or processor under the procedure provided for in Article 60. The DPA competent for the other establishment would act as a CSA. Whether there are conflicting views on which of the CSAs is competent for the main establishment, the

9 According to Article 4(23) GDPR (23) 'cross-border processing' means either: (a) processing of personal data which takes place in the context of the activities of establishments in more than one Member State of a controller or processor in the Union where the controller or processor is established in more than one Member State; or (b) processing of personal data which takes place in the context of the activities of a single establishment of a controller or processor in the Union but which substantially affects or is likely to substantially affect data subjects in more than one Member State.

EDPB would, per Article 65, provide for a binding decision. Second, when a company has just one single establishment in the EU but the processing of personal data substantially affects or is likely to substantially affect individuals in more than one MS, the LSA's tasks are carried out by the DPA competent for the single establishment. The Member State's DPA, where individuals' personal data are processed, acts as the CSA.

After establishing the roles of the LSA and the CSA, the LSA creates the initial decision – the draft decision (DD) – which is then shared with the other CSAs involved in the case. Those CSAs have an opportunity to raise any relevant and reasoned objections to the draft. If objections are raised, and the LSA decides not to act thereon, a consistency mechanism – known as a dispute resolution mechanism – is activated. The dispute is then sent to the EDPB for a binding decision to be issued according to Article 65. The LSA then adopts its final decision based on the EDPB's ruling, which is binding. The controller or the processor must then take all the measures necessary to comply with the decision and notify the LSA of the measures taken. Once a decision has been made, the LSA is responsible for acting against the controller or processor. At the same time, the SAs that received the complaint must inform the complainant per Article 60(7) of GDPR. Throughout the entire process, the SAs are expected to cooperate and, where relevant, with the European Commission. Cross-border cooperation, therefore, serves to attain a public service's intended scope and availability, ensuring harmonised data protection standards across the EU (cf. Molak & Soukopová, 2022. pp. 146–147). Since cooperation seems to be vital to ensure a consistent GDPR enforcement (cf. Balboni et al., 2014; EDPB, 2022b; EDPB, 2020a), the EDPB has called for enhanced cooperation on strategic cases and diversification of cooperation methods used.

In addition to the OSS mechanism on cross-border supervision (Article 60), the consistency and cooperation purpose is further enhanced with the possibility for any SA to request mutual assistance from any other SA[10], such as information requests and supervisory measures, e.g. requests to carry out prior authorisations and consultations, inspections and investigations (Article 61), and a possibility for joint operations of supervisory authorities, where SAs can conduct joint investigations and joint enforcement measures (Article 62, for more see Kuner et al., 2020). Furthermore, the EDPB also issues consistency opinions on certain draft decisions produced by European SAs that have an impact beyond national borders, such as a new set of standard contracts or codes of conduct. The EDPB also has the authority to provide consistent opinions on any matter related to the general application of GDPR or any issue that affects multiple Member States (EDPB, 2020, 2020a). However, in certain exceptional cases, the OSS mechanism can be completely avoided[11].

This new approach to cross-border PDP offering new methods of coordination

10 The mutual assistance mechanism in GDPR incorporates similar provisions as those already provided for in Convention 108, particularly Article 13, as well as Convention 108+.

11 In cases of urgency procedures under Article 66; when processing is done by public or private bodies acting in public interest or as official authorities under Article 55(2); in cases with local impact; in other than cross-border processing cases; if processing stems from a legal obligation, etc.

and consistency tools, therefore establishing a transnational dimension to the supervision procedure, which is generally done solely by national supervision bodies under their substantive and national procedural laws (similarly as in certain fields relevant to the harmonised EU law, cf. Harlow & Rawlings, 2014; Galetta et al., 2015). In such a context, cross-border cooperation serves as an example of a non-hierarchical co-governance tool rooted in the principle of multi-level governance. This approach has been primarily implemented through European integration to foster EU territorial cohesion (cf. Molak & Soukopová, 2022; Ágh 2010)). In its attempt to balance the need for harmonisation across all MSs applying GDPR with effective PDP rights for all EU nationals regardless of their nationality on the one hand and a wish to ease the administrative burden for controllers and processors on the other, the following advantages and disadvantages of the OSS procedure can be distinguished (Table 1).

**Table 1:**

Pros & Cons of the OSS procedure

| ***PROS*** | ***CONS*** |
|---|---|
| – Facilitates cooperation and coordination among SAs.<br>– Provides for easier and less burdensome compliance of organisations that operate in multiple EU Member States.<br>– Can reduce costs.<br>– The cross-border decisions are more robust and efficient.<br>– Promotes consistency in the application of GDPR.<br>– Improves the effectiveness and efficiency of PDP enforcement<br>– Enhances predictability and legal certainty.<br>– Increases efficiency. | – The pros of the mechanism rely heavily on the LSAs' proactive stance and CSAs' proactive cooperation.<br>– Cross-border procedures take additional time and resources.<br>– Can be burdensome for SAs.<br>– In case no agreement between the SAs is reached, the OSS could lead to delays in enforcement.<br>– Can decrease the accessibility of legal remedies for individuals.<br>– Can create confusion and uncertainty. |

Source: Authors' own, 2023.

However, the (dis)advantages of the OSS or any harmonisation of such dimension in the EU closely relate to the issue of EU law autonomy in the Member States. In such regard, it is vital to understand when rule-making falls within the responsibility of national authorities and when the latter act (only) as administrative bodies in single-case decision-making, as the principles and rules that match the one or the other role of

state bodies and the associated type of procedure (regulatory or administrative or punitive) differ. As a result, the Court of Justice of the European Union (CJEU) usually ties its arguments to reference procedural guarantees as part of the general principles of EU law.[12] However, the dilemma of further respect for national autonomy is growing, given the global nature of business. In addition, there is the question of the spill-over effect of GDPR beyond the EU (cf. Roth, 2017; Ryngaert & Taylor, 2020).

### 3.2 EU procedural standards and national autonomy under GDPR

The GDPR aims to harmonise PDP regulations across the EU. However, harmonisation has yet to be fully implemented even more than five years since its entry into force.

Protecting personal data represents one of the fundamental rights of EU citizens in ensuring a democratic society (Kovač & Rudolf, 2021). In contrast, GDPR ensures the substantial legal guarantees to be the same or at least harmonised through national legal implementations in all MSs. Even though all MSs are bound by EU law, there may be variations in how each national legal system ensures effective protection, which could be attributed to the distinct legal tradition and the specific characteristics of the legal system and governing bodies within each country.

While GDPR may include certain procedural provisions (such as those granting powers to SAs), national procedural law applies when EU law does not establish specific procedural rules. GDPR, therefore, leaves the implementation of PDP rights up to national procedural legislation, which draws from the procedural autonomy prerogative of the EU MSs. The national procedural autonomy, therefore, permits the MSs to establish their procedures for enforcing the regulation within their jurisdictions, allowing for a more tailored enforcement of GDPR in the specific legal and cultural context of each MS, all to ensure effective and efficient application of the regulation within their jurisdictions. Therefore, the principle of national procedural autonomy dictates that, in the absence of direct regulation in EU primary or secondary law, MSs retain the authority to independently legislate on procedural matters. However, this autonomy is limited by the requirement that the procedural solutions adopted by the MSs are aligned with the principles of effectiveness and equivalence, with the fundamental principles of administrative law in the region, and with the existing traditional legal system in a MS. Concerning GDPR, this means that national procedural laws may not result in fragmentation and impede consistent handling of procedures throughout the EU. To safeguard the subjective legal rights of individuals, directly applicable provisions of EU law must therefore have full, complete, and uniform effect within the legal systems of the MSs, regardless of any internal rule or practice. The

12 For example, Soprope, C-349/07, 18. 12. 2008, Pelati, C-603/10, 18. 10. 2012, Sabou, C-276/12, 22. 10. 2013, C-73/16, Puškar, 27. 9. 2017. More in Galetta, 2010, or various literature regarding EU v. MSs autonomy, especially in tax matters. For data protection specifically, see the case mentioned below, such as C-132/21, 12. 1. 2023.

classic Simmenthal rule[13] – recently reiterated in the CJEU case C-34/21 – states that national provisions in conflict with directly applicable EU law must be deemed inapplicable and disregarded. It is, therefore, essential to guarantee that national legislation, which establishes specific rules on data processing, aligns with GDPR and does not diminish the protection provided to data subjects.

Specifically, enforcing GDPR must, therefore, adhere to the principles of equivalence and effectiveness. In contrast, EU law should be treated the same as national law (equivalence) and the exercise of rights conferred by EU law should not be rendered excessively difficult or practically impossible (effectiveness) (EDPB, 2021, pp. 10–11; Kovač, 2019).

National procedural autonomy strives to achieve legal consistency across the EU in hopes that every procedural legislation of the EU would offer an efficient manner or tool to apply GDPR's rights in their respective Member State. It presumes that national procedural regulation would allow, on the one hand, a procedure tailored to specific Member States' needs and, on the other, an effective tool to achieve the harmonised application of the law (van der Sloot, 2018, Balboni et al., 2014, Hijmans, 2018).

In the EU legal system, the principle of subsidiarity seems like a vital tenet that promotes decision-making decentralisation and limits the Union's competence to areas the MSs cannot effectively achieve. If the MSs themselves cannot better achieve the objectives of EU regulation, one could argue that EU-wide regulation is necessary – even if that entails regulation of the procedure itself, regardless of the procedural autonomy of the MSs.

Moreover, even when an EU regulation identifies the rights of natural persons, the MSs still preserve a certain degree of autonomy, as set out in paragraph 129 of the preamble to GDPR.[14] However, the MSs do not have identical legal systems to ensure equally effective protection. The differences lie in their legal tradition and individual countries' systemic features of law and authority. This is evident from the wording of paragraph 129 where, after highlighting equality, there is an explicit indication that "investigatory powers as regards access to premises should be exercised in accordance with specific requirements in Member State procedural law" (Kovač, 2019). After that, some minimum requirements are defined, such as demonstrated competence of the orders issued or the need for judicial review of the legality of the measures taken by the

13 According to the CJEU decision in C-106/77 Simmenthal, which can be found on page 641, decision section 7(a), "directly applicable Community provisions must, notwithstanding any internal rule or practice whatsoever of the Member States, have full, complete and uniform effect in their legal systems in order to protect subjective legal rights created in favour of individuals".

14 In order to ensure consistent monitoring and enforcement of this Regulation throughout the Union, the SAs should have in each MS the same tasks and effective powers, including powers of investigation, corrective powers and sanctions, and authorisation and advisory powers, in particular in cases of complaints from natural persons, and without prejudice to the powers of prosecutorial authorities under MS law, to bring infringements of this Regulation to the attention of the judicial authorities and engage in legal proceedings.

supervisory authority, followed by the clause that "this should not preclude additional requirements pursuant to Member State procedural law". However, other provisions, such as Article 58 of GDPR, offer MSs additional procedural requirements and supervision to be carried out as defined by national procedural law. In Slovenia, that implies subsidiary use of the GAPA.

In a recent CJEU case – NoC-132/21, 12. 1. 2023, *Nemzeti Adatvédelmi és Információszabadság Hatóság* – the CJEU addressed the question of balance between respecting national procedural autonomy on the one hand and ensuring that national procedures do not undermine the harmonisation objectives of EU legislation on the other. In this case, the CJEU clarified the boundaries of a MS's procedural autonomy in data protection similarly as in other administrative (e.g. tax) matters, which should always be determined by EU principles of equivalence and effectiveness, sincere cooperation among MSs, and the protection of the fundamental right to effective judicial protection as outlined in the EU Charter. Therefore, when exercising their procedural autonomy, MSs must always ensure that their arrangements of the various national rules across the EU do not hinder or compromise the exercise of the rights provided for in GDPR.

The balance of procedural autonomy vis-à-vis effective insurance of PDP rights could, therefore, be dependent on the following criteria:

- principles of effectiveness and equivalence;
- other EU principles, especially rights to good administration (pursuant to Article 41 of the EU Charter on Fundamental Rights, e. g. access, to be heard, and the like);
- fundamental principles of administrative law in the region;
- existing traditional national legal systems in the Member States.

To address harmonisation challenges, in 2013 and 2016, the European Parliament passed Resolutions with recommendations for the Commission to create a Law of Administrative Procedure for EU institutions and outlines nine basic principles that such a law should adhere to. There have been notable efforts by the EU Ombudsman, the European Parliament, and a group of experts known as ReNEUAL that have significantly contributed to the development of an EU-wide APA, relevant also in the field of PDP. This proposed legislation aims to create a harmonised APA consistent across the EU while considering the different legal cultures among MSs. However, it should be noted that this proposal is intended to be applicable solely to EU authorities and not directly to the MSs per se, which raises questions about the effectiveness of this solution in addressing the challenges faced in PDP regarding cross-border procedures (Kovač, 2016). Furthermore, special procedural rules can always be included in a substantive law overriding the general APA, as is the case of the Slovenian Personal Data Protection Act (PDP Act) in force since January 2023.

## 4. Analysis of cross-border cases in the EU and Slovenia – results

In order to assess the effectiveness of cooperation and consistency mechanisms in the field of data protection, an analysis of the number of cross-border cases handled by DPAs is conducted using statistical data from the annual reports of the EDPB and the Information Commissioner of the Republic of Slovenia (IC) for the years 2020, 2021 and 2022, alongside additional relevant EDPB's reports and letters.

Based on the normative analysis of the duty to cooperate under GDPR to ensure the consistent application of PDP laws, research on the number of cooperation and consistency procedures was conducted, particularly concerning cross-border procedures carried out by all DPAs obliged to cooperate under GDPR (SAs of the European Economic Area, i.e. EU-27 plus Iceland, Norway and Liechtenstein). The analysis begins with EDPB's annual reports to determine how many cooperation and consistency tools were utilised in 2020 and 2021, followed by an analysis of IC's annual report on cross-border cooperation work. Additionally, a request under Regulation (EC) 1049/2001[15] was made to obtain data for 2022 and other specific information not available in the EDPB's annual report. This data is derived from the Information Management Instrument (IMI) system, which facilitates cross-border cooperation among SAs, enabling the exchange of relevant information in the context of cooperation, mutual assistance and joint operations, and the consistency mechanism (Articles 60, 61, 62 and Chapter VII of GDPR).

For the indicators specified below, the percentage growth or decline over the years was explored to provide a better insight into the changes observed. Table 2 presents an overview of the EDPB's annual reports, while Table 3 presents the annual reports of the Slovenian SA (IC) for 2020, 2021, and 2022.

15 Regulation (EC) 1049/2001 of the European Parliament and of the Council of 30 May 2001 regarding public access to European Parliament, Council and Commission.

**Table 2:**

Number of selected cooperation and consistency procedures in the years 2020, 2021, and 2022 and trends (EDPB)

| | ***2020*** | ***2021*** | ***2022*** | ***% 2021 v. 2020*** | ***% 2022 v. 2021*** | ***% 2022 v. 2020*** |
|---|---|---|---|---|---|---|
| **Issued general guidance documents** | 15 | 14 | 11 | -7 | -21 | -27 |
| **Binding decisions under A65(1)** | 1 | 1 | 4 | 0 | +300 | +300 |
| **Urgency decision under A66(2)** | 0 | 1 | 0 | +100 | -100 | 0 |
| **No. of issued Draft Decisions (DD)** | 203 | 209 | 384 | +3 | +84 | +89 |
| **No. of issued Final Decisions (FD)** | 93 | 141 | 330 | +52 | +134 | +255 |
| **No. of mutual assistance procedures[16]** | 2,504 | 2,661 | 3,172 | +6 | +19 | +27 |
| -Formal mutual assistance procedures | 246 | 243 | 248 | -1 | +2 | +1 |
| -Voluntary mutual assistance procedures | 2,258 | 2,418 | 2,924 | +7 | +21 | +29 |

Source: EDPB annual reports for 2020, 2021, 2022.

**Table 3:**

Number of consistency and cooperation procedures in the years 2020, 2021, and 2022 and trends (Slovenian SA)

| | ***2020*** | ***2021*** | ***2022*** | ***% 2021 v. 2020*** | ***% 2022 v. 2021*** | ***% 2022 v. 2020*** |
|---|---|---|---|---|---|---|
| **SI SA mutual assistance procedures** | 123 | 154 | 196 | +25 | +27 | +59 |
| -SI SA formal mutual assistance procedures | 7 | 3 | 4 | -57 | +33 | -43 |
| *Out of those: SI SA responses on other SAs requests* | 3 | 3 | 0 | 0 | -100 | -100 |
| *Out of those: Requests made by SI SA* | 4 | 0 | 4 | -100 | +400 | 0 |

16 Covering all the information requests and supervisory measures, such as requests to carry out prior authorisations and consultations, inspections, and investigations. In this regard, two types of mutual assistance requests can be distinguished: formal mutual assistance requests – with a legal deadline of one month to reply – and voluntary mutual assistance requests without a legal deadline. Both mutual assistance procedures can be used for cross-border cases subject to the OSS procedure, either as part of the preliminary phase, to gather the necessary information before drafting a decision, or for national cases with a cross-border component.

| | | | | | | |
|---|---|---|---|---|---|---|
| -SI SA voluntary mutual assistance procedures | 116 | 151 | 192 | +30 | +27 | +66 |
| *Out of those: requests for information and clarification by other SAs* | *50* | *53* | 175 | +6% | +230 | +250 |
| *Out of those: notifications from other SAs about specific ongoing cases* | *43* | *80* | 55 | +86 | -31 | +28 |
| *Out of those: requests made by the SI SA* | *23* | *18* | 17 | -22 | -6 | -26 |
| **SI SA A60 procedures[17]** | 77 | 62 | 190 | -19 | +206 | +146 |

Source: IC annual reports 2020, 2021, 2022.

In 2020, the EDPB issued 15 guidelines to the SAs to ensure the consistent application of GDPR across the EEA. The topics covered in the guidelines for 2020 mostly entailed the requirements for the COVID-19 pandemic (cf. Rudolf & Kovač, 2022), new technologies such as connected vehicles, targeting of social media users, personal data transfers, and the meaning of specific terms in GDPR such as consent, controller and processor, criteria on relevant and reasoned objections, and others.

In 2021, the EDPB issued 14 additional general guidance documents covering various data protection requirements. These documents addressed topics such as data breach notifications, codes of conduct as data transfer tools, storing credit card data, virtual voice assistants, and interpreting specific terms in GDPR. In 2022, EDPB issued 11 more general guidance documents, including guidance on data subject rights, the application of Article 60 regarding cooperation between the LSA and other SAs concerned, amicable settlements, and the like.

In 2020 and 2021, the EDPB issued a total of two binding decisions; in 2022, it issued four binding decisions to settle disputes between SAs. The rise in the number of binding decisions issued by the EDPB in 2022 may indicate a growing need to address and harmonise contentious issues before they escalate into concrete cross-border procedures. This approach streamlines the process and promotes a more unified and harmonised approach to data protection enforcement (EDPB, 2022b; European Commission, 2020, pp. 5; provide further discussion on this topic).

In 2021, the EDPB issued its first urgency decision based on Article 66 of GDPR. Upon analysing the draft decisions, there was a 3% increase in their issuance in 2021 compared to the previous year. However, 2022 witnessed a significant 84% surge. A similar trend can be observed in the number of final decisions issued. In 2021, there was a 52% increase in final decisions compared to 2020, and this growth continued in 2022 with a 134% increase. Comparing 2020 and 2022 directly, the rise in final decisions issued amounts to a substantial 255% growth.

17 In addition to ongoing procedures already initiated. In this regard, it should also be noted that the Slovenian SA sometimes opens a case file to follow the A60 procedure before a DD is issued (after the identification of the LSA and CSAs). Consequently, there may be instances where no OSS procedure is initiated at all.

Furthermore, the number of mutual assistance procedures has also been analysed, both at the level of the EDPB in general and specifically from the Slovenian SA's annual reports. The number of mutual assistance procedures has increased in both contexts by over 27% at the EDPB level (from 2,504 in 2020 to 3,172 in 2022) and 59% at the level of the Slovenian SA (from 123 in 2020 to 196 in 2022). In both cases, the increase stems from the rise in voluntary mutual assistance procedures that are not bound by the exact legal deadlines specified in A61 but instead involve clarifications, notifications regarding ongoing procedures, and similar voluntary actions undertaken by the SAs. In 2021, compared with the year before, the Slovenian SA's participation in A60 procedures was down by 19%, but saw a staggering increase of 206% in 2022 (190 procedures vs 62 procedures in 2021).

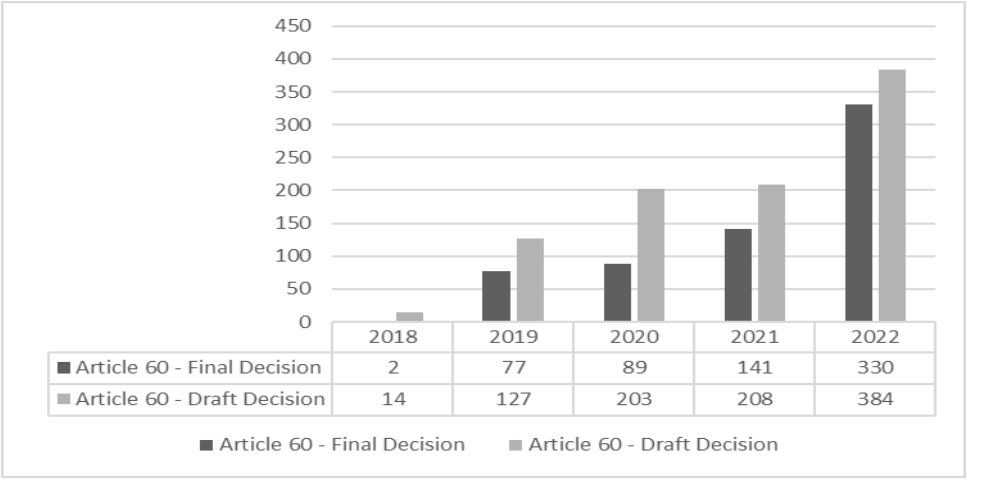
Additionally, a request was made to the EDPB to access statistics on the number of OSS and consistency procedures under Regulation (EC) No 1049 to gather the latest data available as of January 2023. The statistics provided by the EDPB were generated from the information and communications system IMI, which facilitates the exchange of information between SAs to support the cooperation procedures and consistency mechanism of GDPR. To properly analyse the results, it is important to note that these statistics represent cumulative data since establishing the EDPB on 25 May 2018. Additionally, the IMI system functions as an information-sharing tool rather than a case management system that serves to create repository entries and initiate workflows by SAs under various headings. This distinction is reflected in the analysed statistics. In that regard, the reference to case register entries in the statistics do not have a 1-to-1 correlation with the number of cross-border cases handled per SA. Multiple cases may be bundled together under a single-case register entry, meaning that one entry can pertain to multiple cross-border cases.

Furthermore, the statistics related to Article 60 draft decisions, revised draft decisions, and final decisions only capture the number of cross-border cases resolved by an SA per the cooperation procedure outlined in Article 60 of GDPR. Depending on the legislation of MSs, SAs may have handled complaints outside of the A60 procedure per national law (such as in the case of amicable settlements). Also, a consensus has been reached only with the adoption of the EDPB's work on amicable settlements,[18] and all future amicable settlements will be registered as Article 60 final decisions. Additionally, based on Article 60, paragraph 8, if a complaint is dismissed or rejected, the supervisory authority with which the complaint was filed must adopt a decision, notify it to the complainant, and inform the controller thereof. In this regard, it is also possible that a final decision following a draft decision is adopted by the SA where the complaint was filed rather than the LSA.

18 For further information on the topic refer to EDPB's Guidelines 06/2022 on the practical implementation of amicable settlements.

**Figure 1:**

No. of OSS procedures 2018-2022



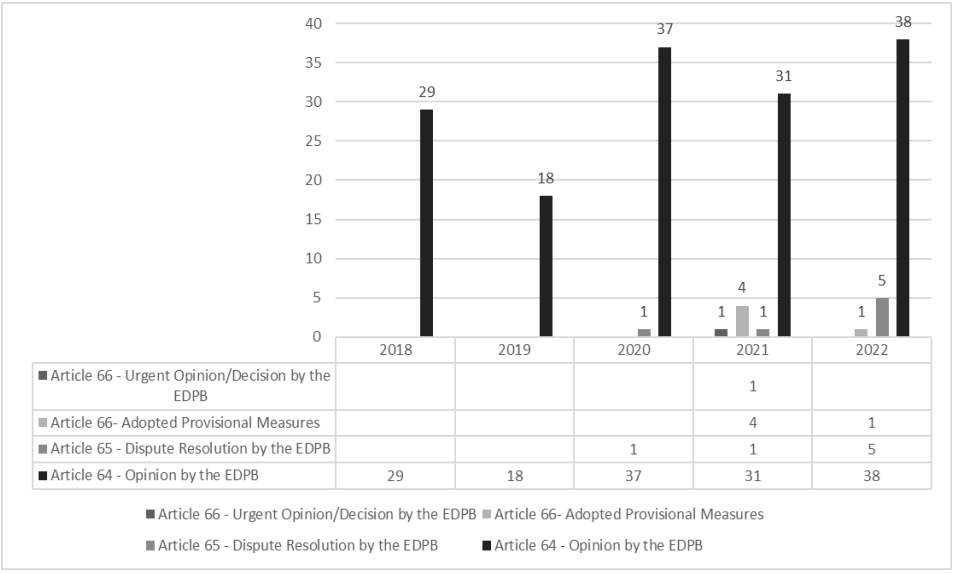

Source: IMI statistics, EDPB's state of play as of 31.12.2022.

Based on the figure above, it is evident that since the entry into effect of GDPR in 2018, the number of OSS procedures dealing with cross-border PD supervision has rapidly risen. The data shows a clear upward trend in issued final and draft decisions from 2018 to 2022. In 2018, only two final decisions and 14 draft decisions were issued, while in 2022, the numbers rose significantly to 384 draft decisions and 330 final decisions recorded in the IMI. The most prominent increase occurred between 2021 and 2022, with final decisions rising from 141 to 330, representing a 134% growth. The substantial increase in draft and final decisions can be attributed to several factors. Firstly, as GDPR has been in effect for over four years, some cases may have gradually reached a resolution (cf. the average time to formally decide on a case – EDPB, 2021b, p. 21). Another possible explanation is the EDPB's stance following the issuance of guidelines No. 06/2022 on the practical implementation of amicable settlements.

Similarly, the number of draft decisions issued increased yearly, with the most substantial increase observed from 2021 to 2022. The number of draft decisions rose from 208 to 384, an 84.62% increase compared to the previous year. When comparing 2022 to 2020, there was an 89% increase in draft decisions issued. However, procedural inconsistencies within these procedures can make them (i) more complex and/or (ii) time consuming. In this regard, procedural harmonisation of cross-border PD supervision offers a possible solution to ensure that procedures are conducted more efficiently and harmoniously (further discussed in European Commission, 2020, pp. 5–8).

**Figure 2:**

No. of consistency procedures 2018-2022




Source: IMI statistics, EDPB's state of play as of 31.12.2022.

Based on the data presented, there seems to be an increasing trend in consistency procedures that complement cross-border supervision in recent years. The EDPB's opinions under Article 64 of GDPR, which outlines the circumstances in which the EDPB must issue an opinion, have shown growth. These circumstances include cases when a SA intends to adopt measures such as establishing a list of processing operations requiring a data protection impact assessment, assessing draft codes of conduct, approving accreditation and certification requirements, determining standard data protection clauses, authorising contractual clauses, or approving binding corporate rules. In 2018, the EDPB issued 29 such opinions, which increased to 38 in 2022. Regarding provisional measures under Article 66 of GDPR, which allows an SA to take urgent action to protect the rights and freedoms of data subjects, four such measures were adopted in 2021 and one in 2022.

Furthermore, a single urgent opinion was issued by the EDPB in 2021. The EDPB also issued seven decisions related to the dispute resolution mechanism set out in Article 65 of GDPR between 2020 and 2022, with the highest number of decisions issued in 2022. Overall, the data suggest that the EDPB has been actively working to ensure consistent enforcement of GDPR through the tools provided in Chapter VII of GDPR. The increasing number of consistency procedures each year indicates a growing need

for harmonisation of SAs PDP enforcement practices, as discussed within EDPB[19] (cf. European Commission, 2020; EDPB, 2022, 2022b) and in the following section.

## 5. Discussion & critical assessment of procedural issues and their possible solutions

As cross-border procedures become increasingly important in enforcing PDP across the EU, it is crucial to ensure that they are conducted efficiently and effectively. The rules of GDPR can be exceptionally limited within certain frameworks under specific conditions outlined in Article 23 of GDPR. However, any limitations must be accompanied by justified legal regulation at the national level (more on this also Kuner et al., 2020, pp. 550 et seq.). While national autonomy remains relevant, it is significantly limited in the context of the most relevant procedural principles developed within the common European administrative space (Galetta et al., 2015; Kovač, 2016).

However, several challenges arise in the procedural implementation of the cross-border OSS mechanism, which we address in this paragraph. One such challenge is variation in the procedure for filing complaints, including different ways of filing and submitting complaints, different languages used in the procedure and in filing the complaint, and the like. Another issue arises when a similar complaint filed in one MS may be accepted by one SA but rejected by another SA on grounds such as lack of residency, failure to send a pre-complaint request to the controller, and insufficient legal identification of the complaint and the like, which can adversely affect the universal right to good administration for complainants under the EU Charter. Differences regarding the submission of complaints can also be seen in technical approaches. For example, the Belgian and Italian SAs allow forms to be submitted to the SA by mail or uploaded to their websites. Conversely, the Polish SA requires data subjects to lodge their complaints orally, physically, or online (only) via the national public portal using a general form not specifically designed for GDPR purposes (thus not by e-mail). Consequently, the requirements for lodging complaints in Belgium, Italy, and Poland are inconsistent and can lead to confusion where cross-border submissions are involved (Fuster et al., 2022).

Due to language barriers, some individuals may also face difficulties submitting a complaint to a DPA in a different MS than where they live or work. While some websites provide information in English, others may not offer details about submitting complaints in English, as is the case in Italy. Additionally, in countries like Poland, Lithuania, and Belgium, it may not be possible to file a complaint in a language other than one of the national languages. The Austrian DPA explicitly requires complaints to

19 See, in particular, the letter of 10.10.2022 (EDPB, 2022) identifying 14 proposals of rules in four groups of procedural issues to be harmonised in a regulatory or at least collaborative manner, such as status of the party to the procedure and their rights, deadlines, investigative powers, and complaints management.

be submitted in German (Fuster et al., 2022).

Moreover, disharmony arises in the practical implementation of complainants' rights to be heard and to participate in the procedure. Specifically, different MSs have varying legislations regarding the active roles of the complainants in administrative procedures before SAs (compare especially European Commission, 2020; EDPB, 2021, pp. 12; 2021b & EDRI 2022). For example, individuals filing complaints in Austria, Cyprus, Greece, Ireland, Lithuania, Luxembourg, Spain, Latvia, Poland, and Slovenia[20] have active roles in their procedures based on national procedural legislation, particularly before CSAs are consulted on the draft decision. In contrast, the practice of the Bulgarian SA provides that CSAs need to be consulted before the complainants are granted the right to be heard, or at least in parallel. The practice is again different in Finland and Portugal, where the right to be heard is granted after sharing the draft decision. In Malta and the Netherlands, parties are heard at the investigation stage but not before the decision is issued.

In contrast, Czech, French, and Swedish national laws do not grant complainants the status of a party to the procedure, thereby excluding their right to be heard. In Spain, the status of complainants as active parties in a case depends on whether the outcome could potentially affect their legal status, which must be evaluated on an individual basis. However, in all proceedings involving the protection of personal data, complainants in Spain are typically regarded as parties (EDPB, 2022, pp. 1–4). Harmonising the principle of the right to be heard is necessary to establish a unified approach regarding its scope, modalities, and timing (for more see EDPB, 2021b, pp. 23–29). For example, SA legislations vary regarding whether envisaged sanctions and corrective measures are included in ensuring the right to be heard. Additionally, depending on the MS, the right to be heard may cover only facts and not legal arguments. Therefore, the 'right to be heard' should also be harmonised.

Considering the good administration principle provision under Article 41 of the Charter and Recital 129 of GDPR, SAs must always exercise their powers within a reasonable time. Firstly, Article 60(3) of GDPR does not specify a substantive deadline for LSAs to submit their draft decisions to CSAs. In particular, this Article states that "*…shall communicate the relevant information…to other SAs concerned…without due delay*" (EDPB, 2022, pp. 33). In this regard, it should be emphasised that a timely submission of the DD to the SA protects the fundamental rights and freedoms of the complainants by ensuring that corrective measures are undertaken in due time to prevent further data infringements on complainants. Additionally, the EDPB (2022, p. 33) notes that despite this provision, the terms "*without due delay*" are vague and subjective and may not be taken to explicitly push for a substantive deadline in LSAs'

20 The Slovenian case seems to be even more complicated as complainants can be granted the status of parties to the procedure only when the procedure is started based on their complaint regarding the breach of their rights. If the procedure is started ex officio, then they do not hold *locus standi* and, therefore, are not granted the right to be heard (Article 26 and others of the PDP Act, in force since January 2023; see the previous section, cf. Kovač, 2019; Rudolf & Kovač, 2022).

duty to submit procedural drafts to SAs. Without a substantive, maximum deadline, LSAs could find excuses for delaying the submission of drafts to CSAs, which means that the complainant's data infringements are likely to proceed.

Other variations in cross-border deadlines relate to the admissibility of complaints, the transfer of complaints to LSAs, starting investigations, and legal deadlines for handling complaints. For example, Austria has a legal deadline of 6 months, Bulgaria and Slovenia 3 months, Italy 9 months with a possibility of further extension up to 12 months based on national laws, while Belgium, Cyprus, Finland, and France, among others, do not have specific provisions in their national law regarding such deadlines (EDPB, 2021b, p. 22). These variations pose challenges to timely resolution of cross-border complaints. The first possible solution to tackle them is to eliminate the vagueness surrounding procedural deadlines by establishing substantive, maximum deadlines for LSAs to submit draft decisions. Second, specific provisions could be introduced to address the failure by LSAs to meet its maximum deadline. The third solution could be standardising the legal deadlines to handle complaints.

There are also discrepancies regarding the grounds for dismissal or rejection of a complaint. While some MSs reject complaints due to insufficient supporting evidence, others reject them based on the complainants' failure to respond within a reasonable timeframe (EDPB, 2022, p. 8). According to EDPB Guidelines 02/2022 (para 225), dismissal of a complaint involves a situation where the LSA found no cause of action regarding a complaint and, thus, no actions are possible under GDPR towards the controller. Since GDPR does not clarify the stage/scope/situations when a SA should dismiss or reject a complaint, SAs interpret the conditions for dismissal/rejection based on their national procedural laws which differ across the MSs. Several measures for harmonisation are needed to avoid differences across the EU.

Regarding judicial remedies in OSS procedures, the CJEU just recently issued decision No. T-709/21[21] pronouncing the controller's application for the annulment of a binding decision by the EDPB under A65 inadmissible. This important ruling clarifies that the EDPB's binding decisions are primarily directed towards SAs to resolve their internal conflicts and, therefore, serve as intermediate or preparatory rulings that do not close the procedure themselves, and the national DPA retains discretion in determining the content of its final decision. The ruling, therefore, explains that the EDPB's binding decision cannot be challenged before the court since the applicant (controller) is not directly concerned by the contested decision of the EDPB, within the meaning of the criteria for *locus standi*, as the applicant's legal position is not directly affected by this act. It states that the validity of the contested decision of the EDPB may only be examined by a national court in relation to the subsequent final decision of the national DPA that closes the procedure at the national level. It is then up to the national court to review the legality of the national final decision by the national DPA. If it doubts about the validity of the EDPB's decision, it may refer a question for a preliminary ruling to

21 See Official Journal of the EU, C 2/50, 3. 1. 2022.

the CJEU.

Challenges also arise concerning amicable settlements. According to recital 131 of GDPR, SAs are often required to resolve conflicts with controllers through amicable settlements, which aim to restore or resolve the rights of the complainants outside formal procedures. However, there are significant cross-border inconsistencies in this regard. Notably, the EDPB (2022, pp. 9–10) notes that some SAs, such as those in Ireland, Italy and Austria, have opted to resolve complaints through amicable settlements per their respective national laws. In contrast, amicable settlements are not possible in countries like Cyprus, the Czech Republic, Denmark, Estonia, Finland, and Slovenia (EDPB, 2022a, p. 22). Despite the guidelines provided by the EDBP for harmonising '*amicable settlements' case resolutions*', several MSs have already outlined that such settlements are not applicable under their procedural laws and have therefore indicated their intention not to abide by these guidelines as they conflict with their national legislation.

Based on the analysis above, the initial hypothesis is confirmed that the lack of EU-wide procedural regulation hinders cooperation and consistency principles set by GDPR. As the number of cross-border procedures and mutual assistance procedures continues to rise, the need for harmonisation is becoming increasingly prominent and needed across the EU.

To summarise, the existence of different national procedural legislations makes cross-border procedures increasingly complex and inconsistent (cp. Kuner et al., 2020, pp. 976, 1153–1154 et seq.; Balboni et al., 2014; Mali, 2019, pp. 309 et seq.). Procedural harmonisation is greatly needed to ensure an efficient and equal procedure across all MSs. However, it is still undecided whether to pursue a lower level of collaboration by issuing EDPB guiding recommendations *et smile* or initiating the GDPR amendment procedure. As shown by this study's normative and empirical part, the first solution is rather partial. Recommendations such as proposals or reports lack the necessary direct binding effect, which is particularly crucial in countries where the gap between open procedural issues and practice is most evident.

Furthermore, procedural law and procedures conducted in real life situations are of major importance if we speak of efficient substantive norms (more in Kovač, 2019; Harlow & Rawlings, 2014). Certain countries, such as Slovenia (cf. Rudolf & Kovač, 2022), lack sufficient general procedural law or deny the usage of (G)APA in the data protection field. While there will always be some unanswered questions that are not covered by legislation but arise from real-life situations, it is evident that many fundamental principles and rights of good administration require more unified and explicit protection, especially in areas such as defining who is recognised as a party and attributing fundamental rights and legal protection to *locus standi*. Under these circumstances, supplementing GDPR with procedural provisions would have a much-desired impact on harmonisation and full enforcement despite the decreasing level of the otherwise well-established concept of EU law autonomy of MSs.

## 6. Conclusion

Procedural principles and rules play a crucial role in upholding the values and guarantees provided by substantive regulations. Therefore, a well-designed procedural law and its proper implementation in practice are necessary to protect individuals' rights as defined by GDPR. However, when it comes to cross-border enforcement of personal data protection rights, the separate national procedural legislations of MSs pose a challenge to the purpose of GDPR harmonisation rules across Europe. These procedural frameworks need to be regulated, interpreted, and enforced in a unified manner to achieve harmonisation.

In light of the research question—whether national laws such as Slovenia's Personal Data Protection (PDP) Act or General Administrative Procedure Act (GAPA) could serve as models for procedural regulation in the field of data protection—the study confirms the initial hypothesis that the absence of a unified EU-wide procedural framework hampers effective cross-border cooperation. While Slovenia's national procedural regulations offer some solutions to these challenges, they are not comprehensive enough to serve as a panacea for the EU. The study reveals that the lack of harmonised procedural rules across MSs leads to inconsistencies in complaint handling, variations in the right to be heard, and divergent approaches to procedural deadlines, among other issues, while such inconsistencies undermine the principles of cooperation and consistency set forth by GDPR.

In summary of the above findings, it is only through appropriate procedural law and its implementation that the true meaning and content of rights at the same regulatory level can be realised. Hence, it seems appropriate to reconsider the EU law procedural autonomy, at least in data protection. The above would ensure the enforcement of democratic values in line with the European tradition. Thus, there is an open call to upgrade GDPR at this level to address these procedural inconsistencies. Not surprisingly, personal data protection and its cross-border enforcement is continuously evolving. Recognising the need for procedural harmonisation, the European Commission (2023) has already taken steps to address these issues. On July 4, 2023, the Commission tabled the Proposal for a Regulation laying down additional procedural rules relating to enforcing GDPR, aiming to rectify some procedural inconsistencies and challenges, specifically in cross-border procedures addressed in this study. Namely, there is no right without a legal definition of procedural issues and implementation per a pre-defined procedure. Procedure should be regulated proportionally so that the level of detail is balanced by the extent of conflicts of legally relevant interests or stakeholders in a given relationship.

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# Reducing Error Rate in Property Tax Declaration Forms through Simplification and Highlighting Instructions

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**Abstract:**

The paper is mixed-method research on reducing administrative burden and, more specifically. the learning costs of filling out a property tax declaration form. It presents the development process of a guidebook, which simplified the instructions and experimentally tested the effectiveness of the guidebook in lowering the error rate. Young Slovak adults (N=43) were divided into two groups; the treatment group worked with the guidebook, and the control group used the official instructions the Ministry of Finance provided. The guidebook aimed to decrease learning costs using behavioural support (simplification, highlighting, examples, and the like). The results suggest that the guidebook helps significantly decrease the number of errors compared to the complex instructions the Ministry of Finance provided. However, while the guidebook is very effective in reducing errors in simple tasks, it may not be sufficient help for more complex tasks such as mathematical calculations. Therefore, simplified instructions must go hand-in-hand with interventions such as pre-populating of forms.

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**Keywords:**
guidebook, laboratory experiment, property tax, salience, simplification

## 1. Introduction

There are things that we do only a few times in our lives; therefore, we have little or no experience with these activities and only limited space to improve. Filling out a property tax declaration is one of many such examples. The task is procedurally complex and cognitively demanding and requires a lot of patience and relatively decent mathematical skills. These elements can be insurmountable barriers, so it is not surprising that most people must visit the tax office and rely on the expertise of civil servants. This results in inefficiency not only through wasted time and resources but also because of the negative experience of citizens when interacting with the state.

Taxation costs are incurred by the local tax authority (administrative costs of taxation) and on individuals (private costs of taxation). Administrative taxation costs are the costs of the public sector operating a tax agenda, whereas private taxation costs relate to complying with requirements of a tax (Nemec et al., 2017). The property tax declaration form is full of pitfalls and barriers that can be very difficult for an individual to overcome. Therefore, the individual compliance taxation costs consist of time and interest loss, mental costs, and financial costs (payment of tax). Moynihan et al. (2014) propose a concept of administrative burden. Residents often face an administrative burden comprising learning, psychological, and compliance costs. In this paper, we use the concept of administrative burden with a focus on the learning costs of individuals. In addition, we utilise two behavioural insights, simplification, and highlighting key information, i.e. salience (BIT, 2015), which can reduce the administrative burden imposed on citizens. Simplified instructions and drawing attention to important information or procedures affect learning costs. Reduced learning costs should make it easier for the individual to understand and follow instructions and thus make fewer errors.

In this paper, we describe the process of designing the guidebook, which aims to reduce the citizens' learning costs (understanding instructions) and help them fill out the tax declaration form, which we test experimentally. The guidebook is an upgraded version of the instructions designed by the Ministry of Finance of the Slovak Republic (hereafter only as the MoF). Simplifying instructions and the emphasis (salience) of important procedures and information is expected to reduce learning costs that should improve understanding of the instructions and thus lower the error rate. Furthermore, learning and psychological costs are difficult to separate and likely to correlate (Halling & Bækgaard, 2022). Learning costs can be associated with psychological costs in the form of stress, stigma or loss of autonomy (Bækgaard & Tankink, 2021). Therefore, reducing learning costs may positively impact user experience.

The paper aims to experimentally test the guidebook as a tool that can help and navigate citizens through paperwork. We use the error rate as a proxy for learning costs. We assume that if learning costs are reduced, individuals can provide more accurate input in the property tax form. Since the guidebook was designed to reduce the learning costs of citizens, the research question is as follows: *Is a guidebook that simplifies instructions and highlights important steps an effective tool in reducing error rate? Furthermore, if so, what is the effect size?* In this sense, we focus on the user experience with the guidebook. To increase the added value of this study, we describe the process of developing and designing the guidebook.

This paper presents mixed-method research, and we use both qualitative (sprint design, interviews) and quantitative (form grading) data collection and analysis (text analysis of existing documents, t-tests, and linear regression) methods to answer the research question. In both phases of the guidebook development (interviews) and effectiveness testing (laboratory experiment), we recruited young Slovak adults who are likely to submit the property tax declaration in the future and are more likely to use an online guidebook than more older adults. The study subjects were recruited from graduate students from the Faculty of Social and Economic Sciences at Comenius University in Bratislava. We can assume that this sample may have better digital skills (working with computers and digital documents) than the general public. However, we expect that younger users will more likely use the online guidebook because they are confident working with computers and digital documents.

We contribute to the literature on administrative burden by examining the effects of simplification and highlighting instructions on reduction of learning costs and by pointing out the limits of this approach in cognitively demanding tasks. Moreover, we investigate the experiences of individuals when they cope with administrative burdens and provide a perspective from a Central Eastern European country that might be different from Western countries in terms of public service motivation and capacity to cope with administrative burdens.

The structure of the paper is as follows: First, we outline the theoretical background of administrative burden and learning costs. Second, the research methodology, the guidebook's development, and the study's context are described. Third, the results, discussion, and points for practitioners follow.

## 2. Administrative burden and ways to reduce learning costs

Burden et al. (2012) define the administrative burden as an individual's experience of policy implementation as onerous. While these authors frame administrative burden as an individual's experience, other researchers focus more on state actions (policies, rules) rather than individual experience (Moynihan & Herd, 2010; Fox et al., 2020; Sunstein, 2022). The administrative burden literature is a relatively young research field with

inconsistent use of critical concepts (Bækgaard & Tankink, 2021). Bækgaard and Tankink (2021) suggest that we need to distinguish between 'state actions' (laws, regulations, and their implementation) and 'experiences of administrative burden' (experiences of individuals). Using this conceptualisation, we focus on the latter in this paper.

Halling and Bækgaard (2022) identify seven causal relationships that have been investigated in the administrative burden literature. Most scholars investigated the relationship between barriers and costs, distributional consequences of barriers, other factors (e.g. frontline workers) and experiences of burden, and factors influencing burden tolerance and barriers. In this paper, we focus on the relationship between barriers and costs. Barriers increase the costs that individuals need to overcome, apply, or comply with the rule. Moynihan et al. (2014) argue that the administrative burden faced by residents consists of learning (acquiring and understanding information), psychological (emotional experience), and compliance costs (fees, waiting times). The administrative burden is present in the situation where individuals apply for a government programme, fill out forms, visit the authorities, collect information and documents, pay fees, and the like. The administrative burden is a kind of tax that could be translated into money, such as an extra hour of paperwork, travel, or reading, which has its opportunity costs in financial resources. Herd and Moynihan (2022) point out that citizens often need specialist help offered by third parties with the knowledge to manage burdens (e.g. tax accountants), and such a cost is itself a burden. Bækgaard and Tankink (2021) stress that learning costs are interconnected with psychological and compliance costs. The experience of administrative burden is relevant in citizens' communication with public administration. Different people have different reactions to the level of burden. Poor, less educated, older, or sick people are less able to overcome the burden, and for them, it is a 'curse' (Sunstein, 2022). Not all of us, and at any time, have the mental capacity (bandwidth) to cope with the burden (Mullainathan & Shafir, 2013).

Various forms of administrative burden can be found in application forms for programmes, subsidies, or allowances, and they impact who will apply and whether they meet the deadline. For example, the way of presentation and registration process of the various social programmes can significantly influence the behaviour of applicants (Bertrand et al., 2004). Other research found that proactive and comprehensible communication can significantly reduce the burden and increase users' incentive to switch from paper to digital forms, especially those whose compliance costs are potentially higher due to commuting (Bhanot, 2021). The administrative burden could be reduced by the so-called 'pushing', which can take the form of setting smart default options (Fishbane et al., 2020). The administrative burden creates friction. Behavioural science shows that friction matters because people value friction more than classical economic models suggest (Herd & Moynihan, 2022).

In this study, we focus on the concept of learning costs as a component of administrative burden. Learning costs imply the lack of information on eligibility for

programmes and administrative duties, a higher amount of information needed, or higher cognitive requirements related to certain administrative procedures (Moynihan et al., 2014). Learning costs are caused, for example, by formalised communication in job advertisements, which discourages participation or application, even if the applicant meets the formal requirements (Sievert et al., 2020). Delays in health care are also associated with a number of administrative tasks and requirements that patients need to fulfil (Kyle & Frakt, 2021). The application forms (education, social programmes, and the like) are associated with learning costs that can make it harder for eligible people to register or enrol. In the context of property tax declaration, learning costs can be associated with studying instructions and the property tax form and finding the required information in the certificate of ownership.

There are several examples of a reduction of learning costs using two main strategies: simplification and guiding. Regarding the first listed strategy, several control trials showed how simplified administrative procedures and more intuitively designed instructions and forms could reduce learning and compliance costs (BIT, 2015). The number of successful applicants for social subsidies increased when the application procedures were simplified (Hanratty, 2006; Ratcliffe et al., 2007). The reduction in cognitive requirements in the application process in the US health system allowed a significant number of citizens to apply for Medicaid (Fox et al., 2020). The simplification and reduction of text distributed to households about taxation have efficiently reduced the learning costs, resulting in higher payment rates (Bhargava & Manoli, 2015). Highlighting key information in official communication can increase the number of visits to the benefit enrolment website (Hyman, 2019). Simplifying communication by making it easy to understand the substance of the communication (e.g. a letter) can reduce learning costs and remove friction that may otherwise lead to inaction (Linos et al., 2022). Simplification that aims to improve the understanding of instructions or categories in forms can significantly reduce the administrative burden. Moynihan et al. (2022) show that people lack an intuitive understanding of state categories (such as the self-employed category), and a more intuitive presentation of information about the categories and benefits in the application forms can improve the rate of filling in forms accurately (matching the favourable category). They illustrated that the state could try to simplify its formal categories to be more consistent with the public understanding of associated terms (Moynihan et al., 2022).

In addition, the guiding (an assistance) can reduce the learning costs of an applicant. The natural field experiment found that applicants who received personalised instructions had a higher success rate and acceptance rate (Bettinger et al., 2012). Elsewhere, the provision of personal assistance in completing applications and automatic registration in programmes have increased the success of the target group to apply for services in education (Bettinger et al., 2012) or health (Herd et al., 2013). However, it may be questionable as to what level of detail in the instructions is still beneficial and what level of detail may no longer help to reduce the burden. Hock et al. (2021) showed that more detailed information about a programme could increase the

enrolment rate more than urgent message framing, which suggests that providing a little more information, either an instruction or an explanation of a formal category (Moynihan et al., 2022), might reduce the administrative burden and errors of individuals in forms.

## 3. Study design and methodology

The methodology has three parts. In the first part, we describe the background of the property tax declaration form in Slovakia. The second part describes qualitative and quantitative data collection methods and the procedures for developing a guidebook and a qualitative method used in pre-testing this guidebook. Finally, the third part explains the laboratory experiment's operationalisation, materials and procedures.

### 3.1 The case of property tax declaration in the Slovak Republic

The property tax declaration form is unified in the Slovak Republic, and the MoF develops the form, and local government units cannot change or amend it. However, the administration of the process and tax collection is the competence of local government units (Sedmihradská, 2013). The average annual revenue from property tax paid by natural persons for a flat / house and non-residential space (e.g. parking, cellar) is about € 8.3 million, approximately 2% of all revenues of the capital city, Bratislava (Final account of the city of Bratislava, 2022). The Department of Local Taxes, Fees and Licences of Bratislava calculates the tax due by multiplying the floor space of a flat or house and non-residential space (e.g. parking, cellar) by the property tax rate (districts closer to the city centre have a higher tax rate). The value of the property is not included in the tax calculation.

Each year, approximately 20 thousand residents are obligated to submit the property tax declaration form in Bratislava. Only a tiny fraction of them can complete and submit the form without assistance from the Department of Local Taxes, Fees and Licences. The reason is that the form requires not only information about the individual but also about the floor space of the property and the size of the land. The form is complex, and the its procedure and categories could be more intuitive. Moreover, most residents fill this document only once or a few times during their life. It is predominantly new property owners and those who have sold real-estate property who are obligated to submit the property tax declaration. Since the local government unit cannot change or amend the form, a guidebook is one of the few options for how local administration may help citizens cope with the property tax declaration.

## 3.2 Developing a guidebook

The guidebook was developed in cooperation with Department of Local Taxes, Fees and Licences of Bratislava, Slovakia. The whole development process was spread over three months and was completed in mid-November of 2021. The estimated costs for developing, designing, and implementing the guidebook on the part of the Department are € 2,700. It consists of three man-days of three tax administrators (gross hourly rate € 25), 10 hours of consultations in the designing and piloting phase (gross hourly rate € 25), and 20 hours of developer and designer work (gross hourly rate € 35).

The process of developing the guidebook had three phases. First, we analysed the entire process of filling out, handing out, evaluating, and processing the property tax declaration and the existing documents. We organised three full-day workshops with three tax administrators. Through a series of design-sprint-like activities (Knapp et al., 2016), we aimed to identify qualitative insights that would help us structure and write the guidebook, including:

- defining personas (characteristics) of taxpayers,
- description of a property tax 'life cycle' from the perspective of both the Department of Local Taxes, Fees, and Licences and a taxpayer,
- identifying the five most common use cases of real estate ownership (type of properties),
- description of the most common errors in property tax declaration made by taxpayers.

Based on the workshop, we created a step-by-step map for filling out the property tax declaration, which became the first version of the guidebook. The guidebook aimed to simplify the instructions by making them easy to understand, using far less text and more graphical design features that drew attention to specific procedures and explained the fields to users.

In the second phase, we verified this version with tax administrators. In total, three rounds of feedback were held. Most attention was paid to the sections where taxpayers are asked to calculate the floor space (in square metres) of the property and land area, which is the most problematic part of the tax declaration. Based on repeated feedback from the tax administrators, we iteratively optimised the guidebook in its final form.

The third phase was pre-testing the guidebook. This phase consisted of six qualitative interviews. The subjects were asked to fill out the tax declaration with the help of the guidebook. We asked them to think aloud and elaborate on their decision-making process, emotions, and ideas as they filled out the tax declaration with the help of the guidebook in printed or electronic versions. Two researchers were present during the interviews, one moderated the session, and the other monitored the entire process and made notes in the Miro software. The interviews lasted approximately 90 minutes and were not recorded. The completed tax declarations were evaluated and stored. Based on the findings, we adjusted and modified the guidebook into a final version.

### 3.3 Materials and procedures

To answer the research questions, we conducted a laboratory experiment to test the effectiveness of the guidebook (treatment) against the pre-existing, publicly available instructions (Instructions for Completing the Local Tax Return, 2022) (control) on how to fill out the property tax declaration on error rate reduction. The learning costs are operationalised as the error rate made by an individual in the form. We assume that if the individual understands the instructions, they will make fewer errors in the form. To measure the effects of the guidebook on the error rate in the property tax declaration form, we conducted a laboratory quasi-randomised experiment with a between-subject design setting.

Laboratory experiments are the least frequent methodology in administrative burden studies (Halling & Bækgaard, 2022), yet they could provide evidence of causal relations. We used the MoF instruction as a baseline (control group) because it is the only official source of instructions on the property tax declaration. We expected that the guidebook that employed simplification and highlighting of information would reduce learning costs connected to filling out the property tax declaration. Therefore, we hypothesised that the study subjects who use the guidebook (treatment) would make fewer errors in the form than those who use the instructions from the MoF.

The experiment was conducted in seven separate sessions (Table 1), and we recruited 43 young adults (31 females), all students of the European Studies and Public Policy programmes at the Faculty of Social and Economic Sciences, Comenius University in Bratislava. Their attendance was rewarded with a € 15 bookstore voucher. The mean age is 22 years, and the overrepresentation of women reflects the gender distribution at the Faculty of Social and Economic Sciences, where the experiment was conducted. We claim that the recruited subjects are likely to submit the property tax declaration in the future and are more likely to use the online guidebook than older adults, which makes them appropriate subjects for the experiment.

**Table 1:**

Session timeline and participants

| Time | Group | Gender (females) | mean age | Previous experience with filling out a property tax declaration |
|---|---|---|---|---|
| Session_1 14/12/21 | Treatment (Guidebook) | 50% (4) | 20 | 0% (0) |
| Session_2 17/12/21 | Control (Instructions from MoF) | 63.5% (7) | 21 | 9% (1) |
| Session_3 20/12/21 | Treatment (Guidebook) | 80% (8) | 23 | 0% (0) |
| Session_4 21/12/21 | Control (Instructions from MoF) | 50% (1) | 20.5 | 0% (0) |
| Session_5 25/11/22 | Treatment (Guidebook) | 100% (5) | 23.4 | 0% (0) |
| Session_6 9/12/22 | Control (Instructions from MoF) | 100% (2) | 23.5 | 0% (0) |
| Session_7 19/12/22 | Control (Instructions from MoF) | 80% (4) | 22.2 | 20% (1) |

Source: Authors' own, 2023.

The study subjects were randomly assigned to control or treatment groups. They self-selected a preference for the most suitable date (offered in the recruitment form) to participate in the study. At random (tossing a coin), we then decided which group (control or treatment) would be the first session. Due to the restrictions of the Covid-19 pandemic and the state of emergency, all sessions were online via the MS Teams platform. The study subjects were separated into individual meeting rooms (breakouts), shared the screen throughout the entire session, and the sessions in the rooms were recorded and stored with the consent of all subjects. Most of the study subjects used personal laptops, and only two subjects used tablets or two screens. The variation in technical equipment and technical skills of the individuals could slightly influence the error rate. We did not measure the technical skills of the study subjects.

All experiment sessions had the same structure: they were facilitated by two researchers and the subjects ought to fill out a property tax declaration based on the materials provided, such as an empty pdf form and guidebook/instructions (for further information, see Supplement A). After the activity, the study subjects from the treatment group were asked to complete an online survey of user experience (see Supplement B). The survey was anonymous and composed of four Likert 7-point scale questions on user experience and two open questions (pros and cons of the guidebook). The response rate was 96%.

We coded the uploaded property tax declarations submitted by the respondents in

Microsoft Excel. Our dependent variable is the number of errors (error rate), incorrectly filled fields. We evaluated the error rate of the information in the tax declaration form for each study subject. The total number of fields evaluated on each property tax declaration form was 64, and each field was evaluated separately. The evaluation was ex-post structured into three parts (Introduction, Section II., Section IV), mimicking the structure of the tax declaration form, to obtain more meaningful insights into the effectiveness of the guidebook. The mandatory fields also included two tables (in Sections II, IV.), where individual columns were evaluated as separate fields. The computation of t-tests and the linear regression were performed in the R program.

**Table 2:**

Summary of the experiment

| **Sample size** | **43** |
|---|---|
| Dependent variable | Number of errors (numeric) |
| Treatment groups | Treatment group (A – Guidebook, N=23)<br>Control group (B – MoF instructions, N=20) |
| Randomisation method | Quasi-random self-selection for one of seven experimental sessions |
| Control variables | Time of the session (numeric)<br><br>Experienced in filling out the form prior to the study session (dummy, 0 – no experience, 1 – previous experience)<br><br>Age (numeric)<br><br>Gender (dummy, 0 – male, 1 - female) |

Source: Authors' own, 2023.

## *4.* Results

Table 3 provides an overview of the descriptive statistics. The data show that most of the study subjects used the full allotted time to complete the task (65 minutes). However, we observe a more significant standard deviation in the treatment group (Guidebook), suggesting that some study subjects tended to finish the task earlier than those in the control group (MoF Instructions). Two study subjects (in the control group) had previous experience filling out the property tax declaration. This previous experience could potentially improve the overall score for the control group because a subject with experience could have a better score. Those study subjects with experience in filling out a property tax declaration achieved 46 (above the average score), and 39 (below the average score), respectively. Furthermore, Table 3 shows a considerable difference in the mean score and the mean number of errors (error rate) between the groups. The error rate suggests that, on average, the study subjects who used the guidebook made

substantially fewer errors than those who used the MoF Instructions. The average error rate in the control group was approximately 21 compared to 10 in the treatment group.

**Table 3:**

Distribution of respondents by groups

| | ***Gender - Female*** | ***Mean age (SD)*** | ***Previous experience with filling out property tax declaration*** | ***Mean time of completion (SD) in minutes*** | ***Mean score (SD)*** | ***Mean number of errors (SD)*** |
|---|---|---|---|---|---|---|
| **Treatment group (A – Guidebook) (N=23)** | 74% (17) | 22 (3.02) | 0% (0) | 63.6 (11.9) | 54.7 (5.8) | 9.6 (5.6) |
| **Control group (B – MoF Instructions) (N=20)** | 70% (14) | 21.65 (1.53) | 10% (2) | 61.0 (6.7) | 43.3 (3.7) | 20.7 (3.7) |

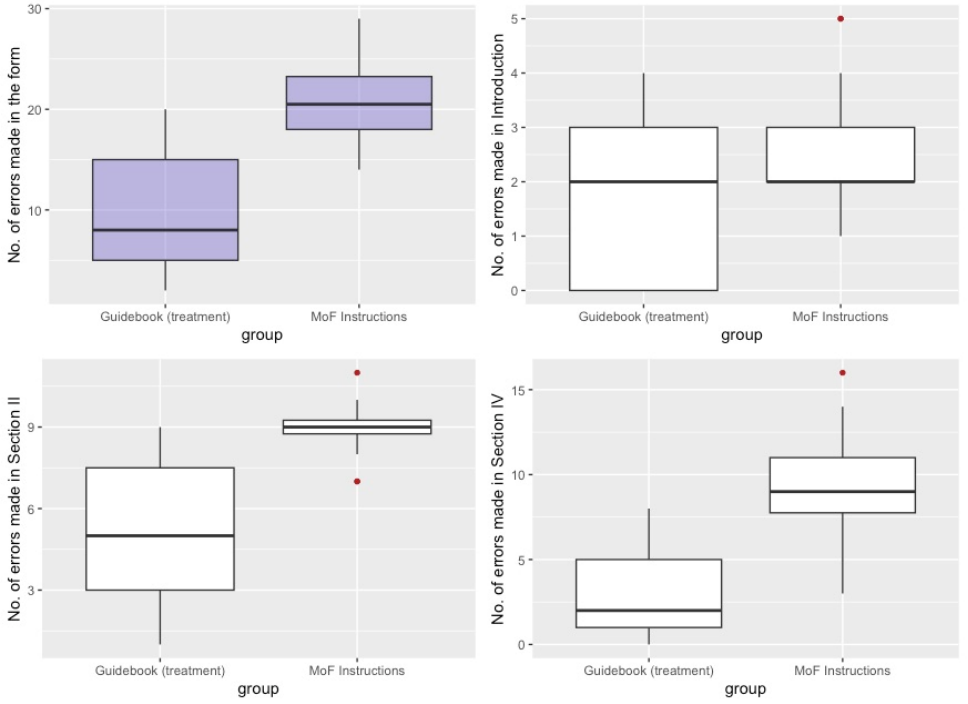
Source: Authors' own, 2023.

Figure 1 shows four boxplots that visually illustrate the performance of the study subjects in filling out the property tax declaration in three sections and groups. The purple boxplot (left upper corner) visualises the results for the entire form (all three sections). The other boxplots show the results for each section of the form, Introduction (general information about the taxpayer), Section II. (information about the land), Section IV. (information about the flat and garage). This division mirrors the structure of the form. The median number of errors for the study subjects of group A (Guidebook, median=8) was more than two times lower than the number of errors in group B (Instructions from MoF, median=20.5). The difference between the treatment group (M=9.6, SD=5.6) and the control group (M=20.7, SD=3.7) is statistically significant, with a mean difference of nine fewer errors in favour of the guidebook users ($t(43)= 7.74$, $p<0.001$).

Looking at the spread of the data and interquartile range statistics (height of the boxplot), we observe that the range of number of errors made in the property tax form is more significant in the treatment (Guidebook) group than in the control (MoF Instructions) group. The above shows that although some study subjects in the treatment group made only a few errors, other study subjects performed much worse and made a similar number of errors as the study subjects in the control group. In other words, the variance in performance, especially in the treatment group, suggests that the guidebook improved performance on average for most, but not of the same magnitude, which may be due to various levels of the study subjects' digital skills (working online with multiple documents), or the ability to work under time constraints.

**Figure 1:**

Number of errors made in the property tax declaration form




Source: Authors' own, 2023.

There are significant differences in the results (error rate) in Sections II. and IV. The guidebook significantly improved the performance of the study subjects in Section IV (bottom right boxplot). The number of errors of the study subjects in the treatment group (M=2.9, SD=2.7) is three times lower than in the control group (M=9.2, SD=3.1) ($t(43) = 6.9$, $p<0.001$). The number of errors made by the study subjects in the treatment group (M=5.2, SD=2.5) is approximately 40% lower than in the control group (M=9.0, SD=1) in Section II of the property tax form ($t(43) = 6.6$, $p<0.001$). On the other hand, we observe a statistically significant but relatively small difference in the number of errors made by study subjects in the Introduction section of the property tax form. The study subjects in the treatment group (M=1.5, SD=1.4) made a lower number of errors than those in the control group (M=2.6, SD=1.1) ($t(43) = 2.6$, $p=0.013$). However, the mean difference is only one error. In other words, both the MoF instructions and the guidebook work similarly effectively in the section where users fill in data about the taxpayer. Information about the taxpayer (e.g. name, address, identification number) is straightforward to fill in. The data suggest that two of the most problematic fields in this Introduction section of the property tax form are the year and the type of property tax

declaration. These are fields where many study subjects made errors in both groups but fewer in the treatment group.

The results of the group comparisons align with the results of linear regression (Table 4). The model suggests that the guidebook improves a study subject's performance when the error rate tends to be lower by 11 errors compared to the control group (reference group). Previous experience with property tax declaration, study subject age and completion time does not have a statistically significant effect on the error rate in filling out the property tax form. However, the model shows that the male study subjects made fewer errors than the female study subjects, which may be an interesting hypothesis to test in the future.

**Table 4:**

Linear regression

| | Error rate | | |
|---|---|---|---|
| ***Predictors*** | ***Estimates*** | ***CI*** | ***p*** |
| **(Intercept)** | 20.87 | 5.26 – 36.47 | **0.010** |
| **Treatment [guidebook]** | -11.21 | -14.03 – -8.38 | **<0.001** |
| **gender [male]** | -4.31 | -7.62 – -1.00 | **0.012** |
| **time** | 4.78 | -4.43 – 13.99 | 0.300 |
| **experience [y]** | 1.94 | -4.77 – 8.65 | 0.561 |
| **age** | -0.18 | -0.75 – 0.39 | 0.524 |
| **Observations** | **43** | | |
| **$R^2$/$R^2$ adjusted** | **0.689/0.647** | | |

Note: The outcome variable is the error rate in the property tax form. The predictor is the dummy variable treatment. The reference levels for treatment are the control group (MoF instructions), for gender, female, and for experience, no experience.

Source: Authors' own, 2023.

The model is in the correct functional form (reset test, p>.05).

No multicollinearity (VIF), VIF below 10.

No heteroskedasticity (the errors have constant variance) in the model (bp test, p>.05).

The most extreme outlier has a Cook's distance value of 0.16.

The user experience (UX) follow-up survey results suggest an upbeat assessment of the guidebook by the study subjects. The median values (7 is the highest value) for clarity and general satisfaction with the guidebook were 6. The median values for the other two items, recommendations to relatives and the usefulness of visual illustrations, were 7. Overall, the mean value of the user experience was 6.3 (SD=0.62), which indicates that the study subjects rated the experience very positively. More significantly, the most valued were the colourful illustrations, bolded key information, and detailed but clear and straightforward instructions. However, some of the study subjects pointed out that the final land area calculation remained a complicated operation.

## 5. Discussion

Bækgaard and Tankink (2021) note that there is little attention in the literature to measure the experiences of individuals when they face administrative burdens. Individual experiences are often left out of empirical research. Moreover, there is little focus on positive experiences when interacting with the state. Our study addresses several gaps. This mixed-method research shows that behavioural insights such as simplification of instructions and highlighting information can reduce the administrative burden. Specifically, the learning costs, along with improving the user satisfaction of users who fill out forms, and so improve experience in interaction with the state. Based on the research sample of young Slovak adults, we suggest that these positive effects will be primarily for the young adult population, who may have a higher level of confidence in using a computer and working with digital documents, but a lower level of experience in filling out forms than older users. In addition, Halling and Bækgaard (2022) point out that most of the research on administrative burden is conducted in Western countries which have specific situations in terms of public service motivation, capacities and capabilities to cope with administrative burden. Therefore, the perspective from a Central Eastern European country is a relevant contribution to the literature. Crivelli (2019) compared the strength of tax administration relative to GDP and found that Slovakia, Czechia and Poland underperform. Their tax administrations are relatively weaker than in Slovenia or Hungary, and one reason is poor online services. In addition, several studies (Vítek, 2008; Klun, 2003), have analysed the costs of taxation in the region. For example, Nemec et al. (2015) showed that the administrative costs of the Slovak tax system are higher compared to other CEE countries.

Moreover, the administrative costs of collecting the property tax as a percentage of tax revenues are one of the highest compared to other taxes (ibid.), which suggests that the agenda of property tax is relatively complex and time-consuming for local tax authorities. In this context, our contribution is based on analysis and reducing learning costs, which we claim to be very closely connected with compliance and psychological costs within the administrative burden concept.

Our results suggest that simplification and highlighting key information are effective interventions in reducing the error rate in the property tax form. Simplifying instructions, simplified explanations of categories (types of property tax declaration, the year to which the tax declaration relates, type of owner, and the like) and highlighting key information by making it easy to understand can reduce learning costs (Linos et al., 2022; Moynihan et al. 2022; BIT, 2015). The observational character of the study enables one to identify the most problematic parts of the form up to the level of specific fields. The results suggest that the guidebook effectively improves accuracy in simple tasks but has somewhat limited effects in more complex tasks, such as mathematical operations (computation of land area). Thus, this study provides valuable insights for the improvement and further development of an electronic version of the property tax declaration with behavioural support and a built-in calculator of property and land size.

The differences in number of errors between the treatment (Guidebook) and control (MoF instructions) groups are significant in more cognitively demanding parts of the form, where calculations and more sophisticated input are required. Despite this, none of the study subjects filled out the form completely (100%) correctly. One of the reasons could be the time limit (65 minutes). An extra 10 or 15 minutes could have improved the accuracy. The fact that most study subjects used the full allotted time to complete the task in both the treatment and control groups indicates room for improvement in the guidebook. Even one error means that the taxpayer will be contacted by the tax administration and asked to correct the declaration, which implies costs on both sides, administration and citizens.

The study has several limitations. Although power analysis shows that the risk of incorrectly rejecting the null hypothesis is low (see Supplement C), a larger, less homogeneous and more representative sample would increase the external validity of the results and rule out the possibility that positive effects are due to chance or sampling error. The study subjects were recruited from among university students. However, their age, computer skills and inexperience in filling out the property tax declaration made them relevant subjects for this study. We argue that the sample of young Slovak adults does not substantially bias the results because this is the population of potential users of the online guidebook, and they are very likely to submit a property tax declaration in the near future. The pandemic did not allow in-person testing in the laboratory; therefore, we used the MS Teams online platform, which allowed control of the study subjects. Variability in the study subjects' computer skills (e.g. working with multiple open documents) may have partially influenced the time needed to solve the task.

## 6. Conclusion

Although the MoF regulates the property tax declaration, the local administration has several options on how to reduce the administrative burden for the taxpayers. One

strategy can be the simplification of instructions and highlighting key information. This paper shows that this strategy might significantly reduce the error rate and improve user satisfaction when interacting with the tax administration.

A guidebook or personal assistance is a legitimate and feasible short-term strategy to reduce administrative burden. However, developing the guidebook is a time and resource-demanding activity and requires tax administrators' active participation and collaboration. As already mentioned in the methodology section, the estimated costs of developing, designing, and implementing the guidebook were € 2,700, which is a negligible investment in the context of the total annual property tax collection for residential and non-residential properties in Bratislava (€ 8.3 million). Tax administrators have insights into the procedures and logic of tax calculation and the related legislative details. Furthermore, the tax administrator participation creates a sense of ownership of the intervention that facilitates mental alignment among stakeholders and encourages immediate adoption of the intervention into practice after the experimental testing. All this may be one of the reasons they applied research with a direct positive implication for public administration. The final version of the guidebook was published on the official city of Bratislava website (Instructions for Completing and Submitting a Tax Return for Real Estate Taxes - Guidebook, 2021) in 2021 and later in 2022, when the city created a new web site for the property tax agenda, ensuring the guidebook has been placed as the first post in a prominent place. This visible placement helped to increase the outreach. The guidebook was viewed more than 20 thousand times in 2022 and 12 thousand times in January 2023 alone, when most people submit their property tax declaration. The average user satisfaction collected through the feedback form is 6.2 (7 as a maximum value). In addition, the guidebook received a universal design and is available and accessible to any citizen, regardless of where in the city they declare ownership of a property.

However, this approach has its limits and is less effective in tasks that are more cognitively demanding. Moreover, reducing learning costs might not always directly decrease the error rate. There may be other potential barriers or reasons to fill out the form incorrectly. Local administration should therefore consider simplifying tax agenda processes (Pita & Močević, 2018) and specific measures such as prepopulated fields in forms or automatisation. Prepopulated fields in tax forms are effectively a default that simplifies the process and can reduce non-compliance (Fonseca & Grimshaw, 2017). Fonseca and Grimshaw (2017) note that compliance can be boosted if prepopulation goes hand-in-hand with reactive nudges (e.g. norm message).

On the other hand, automatisation means that all the paperwork is handled by the administration and the citizens are contacted by the administration only to check the accuracy of the information and to pay the tax. However, the availability of accurate administrative data and a solid IT infrastructure are prerequisites for automating this procedure. Digitalisation is associated with transaction costs related to the design and implementation of new processes (Dobrolyubova, 2021). Although digitalisation and the introduction of e-Gov systems are primarily client-oriented and decrease the

administrative burden for citizens, it also simplifies internal administrative processes long-term (Hajnal et al., 2018), which could have positive effects on both the public administration and the industry sector and their cooperation (ibid.).

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## Appendix – Supplements

### Supplement A: Description of instructions provided to study subjects

The sessions of the experimental design began with the introduction and explanation of the purpose of the session, namely, to fill out a property tax declaration based on materials that would be provided to the study subjects. One of the researchers introduced all the materials – property tax in pdf form, MoF instructions/guidebook, property ownership documents, and information about the fictitious owner. The fictitious owner is Mária Barillová, a fictive female resident of Bratislava who recently bought a flat with a parking space, which she must now declare in the property tax declaration. The story (provided orally and in pdf form) involved all the specific information a taxpayer needs to complete the property tax declaration successfully. The task for the study subjects was to fill out the property tax declaration form for the fictitious owner. The study subjects had to use only the materials provided at the beginning of the session. An Internet search was not allowed, and the research team randomly checked the work of the study subjects (by visiting the meeting room at approximately 2-minute intervals). Before starting, they were asked to try to access the materials and verbally validate the access to the documents. The task had a time limit and transparency condition: participants had 65 minutes to complete the task. The end of the time limit was announced 10 minutes in advance. After the end of the time limit, the study subjects were asked to save their work (the pdf form) regardless of their progress and upload it to their meeting room so it could be stored and later analysed by the research team.

**Supplement B: User experience**

The feedback form on the guidebook was composed of four Likert seven-point scale questions. We computed a variable of user experience (UX) as the mean value of all four items in the feedback form. Cronbach's alpha, which is a measure of internal consistency, is at a level of 0.79 that indicates a high level of internal consistency. Cronbach's alpha was calculated in the R program (package 'psych').

Questions in the feedback form:

**To what extent was the guidebook easy to understand for you?**

Indicate on a scale of 1 – completely incomprehensible, 7 – completely comprehensible.

**How would you rate your satisfaction with this guidebook?**

Indicate on a scale of 1 – completely dissatisfied, 7 – completely satisfied.

**To what extent would you recommend this guidebook to your relatives if they need to complete a DP for a property?**

Indicate on a scale of 1 – definitely not recommended, 7 – definitely recommended.

**How would you rate the usefulness of the visual illustrations in the guide?**

Indicate on a scale of 1 – not useful at all, 7 – very useful.

**Supplement C: Power Analysis**

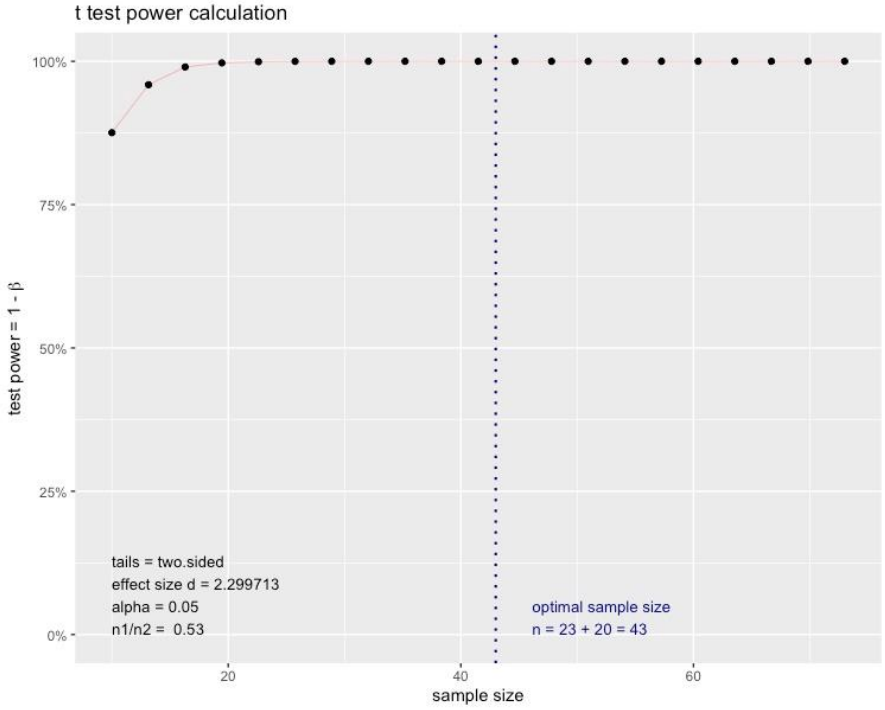
Cohen's delta is a measure of the effect size, indicating the magnitude of the difference between two means. In the R program, Cohen's delta can be calculated by subtracting the mean of one group (control group) from the mean of another group (treatment group) and dividing the result by the pooled standard deviation.

We used the 'cohen.d()' function from the 'effsize package' to calculate the effect size. The function returns a value of 2.299713, representing the effect size (the standardised difference between the means of the two groups). Cohen's d value of 0.8 or greater is typically interpreted as a large effect size.

To calculate the power of a test in R, given the effect size (Cohen's delta), sample size, and group means, you can use the 'pwr.t2n.test()' function from the 'pwr package'. The 'pwr.t2n.test()' function returns a list of values, including the calculated power. In this example, the calculated power is 0.9934237, which means that there is a 99.3% chance of correctly rejecting the null hypothesis if the alternative hypothesis is true, given a sample size of 43, an effect size (Cohen's delta) of -2.299713, and group means of 23 (treatment group) and 20 (control group).

**Figure 2:**

Calculation of the power of the t-test



10.2478/nispa-2023-0019

# The Alleged Culprit of Poor Coordination of Integration of Health and Social Care Services for Very Ill Older Persons in Sweden, 2000-2022

*Iwona Sobis*[1]

**Abstract:**

Despite numerous attempts to transform Swedish older adult care, similar problems regarding its coordination have persisted over the years. This literature review aims to identify which coordination mechanisms can be perceived as the alleged culprit of poor coordination of integrated health and social services for seriously ill older individuals in Sweden between 2000 and 2022. Classical and contemporary coordination theories are utilised to pinpoint these coordination mechanisms, and the analysis is based on the content of collected articles from this thematic area. This literature review reveals that the following coordination mechanisms are perceived as the primary cause of poor coordination in older adult care: (1) plans, programmes, rules, and standardised work processes. Research has confirmed that decentralisation, the autonomy of regional and local authorities, new regulations implemented in the spirit of NPM, and double principalship have hindered care integration for seriously ill older adults; (2) roles, standardisation of skills, and direct supervision. Neither organisational principal adequately addresses excess employee workloads and an insufficient number of employees providing care services, which generates stress, conflicts, and even occupational burnout among staff. They do not prioritise staff competency development; (3) proximity, feedback, and adjustments through mutual communication. Most studies have shown that communication among staff is crucial to achieving integration, but it could be more effective among staff members involved

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in providing care. Knowledge about "objects and representations" and "routines and standardisation of outcomes" is somewhat limited and deserves further research.

**Keywords:**
coordination, dual principalship, older adult care, integration of health care and social care services

## 1. Introduction

The Elderly -Reform (Ädelreform), initially discussed by the social democratic political bloc in the mid-1980s, was eventually implemented in 1992 by the centre-right bloc. Despite numerous attempts to transform Swedish eldercare, similar coordination problems have persisted for decades. The main objective of the reform was to move older individuals, often perceived as 'bed blockers', from hospitals to their own homes, where they could receive care services of high quality, live with dignity, and remain independent (Lagergren, 2002; Carlström, 2005; Sobis, 2013). This reform involved the transfer of approximately 30,000 beds, along with the corresponding financial responsibility, from county councils to municipalities.

According to the Welfare Act (SFS 1993: 390) and the Health Care Act (SFS 1992: 567), regional and local authorities were expected to share responsibility for eldercare and integrate health and social services for older adults, which necessitated the need for a board representing both organisational principals. While the Parliament (Riksdag) and the government were responsible for all health and social care at the national level, they formulated main objectives for older adult care and strategies to achieve those goals, created legislation and oversaw the implementation of the planned reform, ensuring that changes were in line with the intended objectives. They were also responsible for additional regulations, directives, and policies towards eldercare for lower levels of public administration. They monitored whether the major objectives were achieved per regulations and whether funds allocated to eldercare were used correctly.

Since 1992, health and medical care provision has been decentralised into 21 regional authorities providing primary health and medical care, while 290 local authorities are responsible for providing social care. Following the Elderly-Reform, municipalities have become responsible for delivering primary health and social care services at residential care homes, inclusive sheltered housing, retirement homes, group dwellings for older persons, and older individuals' private homes. Regional and local authorities are autonomous and self-governing, and are expected to share responsibility for coordinating the integration of health and social care for seriously ill older individuals. However, Public Official Reports - SOU (see: SOU 2008: 51; SOU 2017: 21; SOU 2020: 80) have shown that the organisation of care for older adults has not worked

as expected. SOUs have emphasised that regional and local authorities should pay more attention to ethics, morality, and equality of access to care services for older adults to guarantee a 'worthy life,' 'well-being,' and 'high quality' of eldercare services for individuals with extensive needs of health and social care services.

Therefore, this literature review aims to identify which coordination mechanisms can be perceived as the alleged culprit of poor coordination of integrated health and social services for seriously ill older individuals in Sweden between 2000 and 2022. Classical and contemporary coordination theories will be used as analytical tools for identifying those coordination mechanisms. The analysis is based on the content of the collected articles from this thematic area.

This article is structured as follows: section 2 provides a theoretical framework after the introduction. Section 3 presents the methodological approach, while section 4 focuses on the institutional context of this research. Section 5 presents the empirical results, and section 6 answers the research question and draws conclusions.

## 2. Theoretical frame

Organisational Theory provides insights into coordination and coordination mechanisms, which are essential for the success or failure of coordination. Traditionally, two theories have been used: the first, created by March and Simon (1958), distinguished between coordination by plan or programme and coordination by feedback, while the second, created by Mintzberg (1979), described specific coordination mechanisms for both categories. Mintzberg's coordination mechanisms included adjustments by mutual communication, direct supervision, standardisation of processes and outputs, and standardisation of skills.

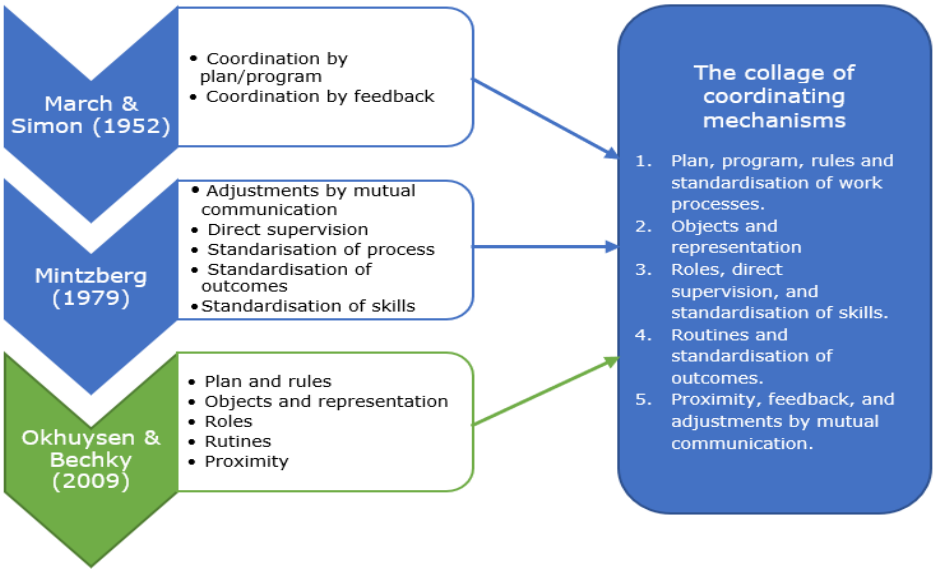
A modern theoretical approach by Faraj and Xiao (2006) emphasised the importance of "dialogic coordination" for interventions across professional boundaries. Prætorius and Becker (2015) suggest that coordination mechanisms occurring through standardisation of processes or outputs are suitable for situations characterised by low work complexity. Coordination by mutual adjustment works better when there is strong interdependence among staff.

Okhuysen and Bechky (2009) synthesised the traditional and modern theoretical views of coordination mechanisms and proposed an integrative framework with five categories: plan and rules, objects and representations, roles, routines, and proximity. Accountability, predictability, and shared understanding are additional conditions that are friendly for coordination of actions among interdependent professions participating in the work.

The theoretical collage presented below will be used to structure the presentation of research outcomes in section 5, which focuses on the poor coordination of health and social care services for seriously ill older persons in Sweden.

**Figure 1:**

The collage of coordinating mechanism used as analytical tools when selecting and analysing the empirical articles




Source: Authors' own, 2023.

## 3. Methodological approach

This integrative literature review aims to identify the coordination mechanisms contributing to the poor integration of health and social services for older adults in Sweden from 2000 to 2022. The theoretical framework presented in Figure 1 in Section 2 assisted the author in selecting empirical studies for this review and conducting the analysis.

Databases from three sources were utilised: (1) the Gothenburg University library, (2) Google Scholar, and (3) ResearchGate. Keywords such as 'care for seriously ill elderly,' 'elderly with severe illnesses,' 'dual principalship,' 'coordination,' 'coordination mechanisms,' 'integration,' 'healthcare services,' 'social care services,' 'tensions,' 'deficits,' and various combinations like 'coordination* + healthcare + social care, elderly + Sweden' or 'integration* + healthcare + social care' proved helpful in locating peer-reviewed empirical articles. Filters and keywords ('coordination* + healthcare + social care, elderly + Sweden, 2000 – 2022') were applied to narrow down the articles, resulting in 344 hits. All these scientific articles were collected between September 2022

and March 2023 and published in both Swedish and international scientific journals. Therefore, the issue of validity and reliability for empirical studies based on quantitative methods or internal credibility, external transferability, and dependability for qualitative research were addressed through the authors' work and the peer-review processes before publication.

The initial selection involved reviewing the titles and abstracts of the articles. The second selection was based on reading the introductions and presentations of research outcomes, which was decisive in determining whether an article was accepted or rejected. The accepted articles for analysis were related to one or more of the coordination mechanisms presented in Figure 1. In some cases, selected articles did not explicitly use the terms 'coordination' or 'coordination mechanisms'. However, the description of the research sheds light on the challenges of coordinating health and social care services for older adults.

The selected articles were primarily saved as PDF documents and analysed by coding and note-taking directly within these PDFs. Subsequently, the results were transferred to a separate document, a matrix previously prepared to categorise the coordination mechanisms illustrated in Figure 1. Occasionally, coding and analysis were performed online if an article couldn't be saved as a PDF document. The most relevant findings were directly recorded in the matrix in such cases. Ultimately, 22 articles met the criteria for inclusion in the analysis.

Additionally, Government Official Investigations (Statens Offentliga Utredningar - SOU), various public reports from the National Board of Health and Welfare, data from the Swedish Association of Local Authorities and Regions (SALAR), legal provisions, and information from Statistics Sweden (SCB) were collected to provide context for this review. All translations from Swedish to English were carried out by the author of this article when the empirical studies were originally written in Swedish.

## 4. Institutional context for the years 2000 - 2022

Sweden experienced a relatively favourable balance between its young and senior population from 2000 to 2022. However, during this period, there was an increasing number of older individuals in 2022 compared to 2000, while the number of young people decreased in 2022 compared to 2000. Many experts suggest that the gap between the young and the old may continue to grow in the future. Therefore, providing care for older adults is an important issue for national, regional, and local authorities who are responsible for coordinating the integration of health and social care services for very ill older individuals.

**Table 1:**

The Swedish population, 2000–2022

| ***Population on 31 Dec.*** | ***2022*** | ***2020*** | ***2015*** | ***2010*** | ***2005*** | ***2000*** |
|---|---|---|---|---|---|---|
| Total | 10 521 556 | 10 379 295 | 9 851 017 | 9 415 570 | 9 047 752 | 8 882 792 |
| Men | 5 298 324 | 5 222 847 | 4 930 966 | 4 690 244 | 4 486 550 | 4 392 753 |
| Women | 5 223 232 | 5 156 448 | 4 920 051 | 4 725 326 | 4 561 202 | 4 490 039 |
| Number of persons, aged 0-17 | 2 194 785 | 2 189 403 | 2 025 077 | 1 919 094 | 1 934 239 | 1 937 779 |
| Persons aged 0-17 in % of total population | 20.9 | 21.1 | 20.6 | 20.4 | 21.4 | 21.8 |
| Number of persons, aged 65 and older | 2 147 137 | 2 088 086 | 1 947 227 | 1 737 246 | 1 565 377 | 1 530 887 |
| Persons aged 65 and older in % of total population | 20.4 | 20.1 | 19.8 | 18.5 | 17.3 | 17.2 |

Sources: SCB Statistics Sweden.

The proportion of public expenditure on care services, income support, pensions, and the like accounted for 33% of GDP in Sweden, the highest level among the OECD countries. In addition, direct and indirect taxes in relation to GDP for 2000-2022 were about 54%, resulting in the Swedish national, regional, and local authorities being obligated to provide care services for very ill older people in line with their needs so that they could live in dignity. It is worth noting that most older people contributed to the development of GDP over the years before retirement. In 2018, the share of expenditure on older adult care in GDP was 2.4%, and most of the cost was covered at the municipal level (Värja, 2022, p. 67f).

Although some progress in care service integration has been made, issues still need improvement because the eldercare did not work in line with the very ill older adults' needs during the investigated period. Even within the state legislation, there were some paradoxes. Table 2 below presents the major acts and regulations dealing with the restructuration of Swedish care for older adults between 1992-2022. The legislative changes aimed to improve the coordination of health- and social care integration at the local level. In 2000, around 20% of the entire country's operating budget was allocated to care for older adults, but twenty years later, in 2020, this share had decreased to 19%, corresponding to over 135 billion SEK (SCB, 2021).

Health and social care integration appeared ambiguous and left much room for interpretation, resulting in legal provisions that sometimes compelled staff to follow regulations without the ability to make exceptions, causing more harm than good to sick older individuals. A thorough examination of the legal acts revealed inconsistencies among the laws, creating a "Catch 22" situation. For instance, the Healthcare Act (1992:567) stressed the significance of introducing a Nurse with Special Medical Responsibility [MAS] for older adults at the local level.

A registered nurse (RN) with Special Medical Responsibility (MAS) was expected to coordinate health and social care interventions within municipalities. However, there needed to be more clarity regarding which domain the RN should belong to: health care or social care, or even the local authority. Additionally, there was a dual principalship towards care for older adults, with each principal organisation having its own values, professional norms, and organisational culture. Although the Act on Joint Boards in Health and Social Care for the Elderly mandated integration between the health care and social care domains, everyday practice showed a lack of cooperation. As a result, this integration posed a significant challenge for national, regional, and local authorities, and other stakeholders such as NGOs or Local-Regional Associations. It is worth examining the empirical outcomes of the shortage of coordination of care services for seriously ill older persons.

**Table 2:**

The major regulations concerning the coordination and collaboration of Swedish health and social care for older adults, 1992 - 2022

| Basic legal provisions | Complementary legislative amendments | A restructuration of health care and social care services |
|---|---|---|
| **The Health Care Act (SFS 1982: 763)** | The Health Care Act (SFS 1992: 567) | According to § 24, municipalities were required to employ a nurse with special medical responsibility (known as a MAS) for older people. This regulation paved the way for what is now known as the Whole-Elderly Delegation Reform (Hel-Ädel)." |
| | The Government Bill of 1996/97:60 [Reg. proposition 1996/97:60] | "This bill helped to prioritise palliative and long-term care within the Swedish older adult care system." |
| | Act (SFS 2003:1210) on financial coordination of rehabilitation efforts, the county council may participate in financial coordination within the field of rehabilitation. | "The county council is responsible for contributing to the financing of activities that are carried out collaboratively." |
| | Act (SFS 2017:612) on collaboration on discharge from closed health and healthcare | Chapter 1, § 1 outlines how interventions should be planned for individuals who require interventions from multiple units within relevant operations after their discharge. It also specifies the municipality's payment responsibility for certain patients who are ready for discharge.<br>Chapter 5 discusses the municipality's payment responsibility in more detail. According to § 1, a municipality must provide compensation to a region for a patient who is being cared for in closed care after their attending physician has determined that they are ready for discharge. This is subject to the regulations outlined in §§ 2-6, as specified by the law (2019:979). |
| | Act (SFS 2019:913) | § 2 specifies that the region and the municipality or municipalities can only collaborate under this law if the joint committee's area of responsibility includes data from both parties. |
| | The Welfare Act (SFS 1993: 390) | The regulation made it mandatory for municipalities to plan their activities in collaboration with county councils and other communal agencies. |

| | | |
|---|---|---|
| **The Welfare Act (SFS 1980: 620)** | Welfare Act (SFS 1997: 313) modernised the Welfare Act (SFS 1980: 620). | According to §§ 19 and 20, social welfare committees are responsible for ensuring that older people can live independently, safely, and with respect for their autonomy and integrity. Older adults should receive support and assistance at home initially, and only move to care facilities if absolutely necessary. |
| | Welfare Act (SFS 2001: 453) | Chapter 3, § 3 states that efforts within social services must maintain high quality standards, with staff possessing appropriate training and experience for their assigned tasks. The quality of the business should be systematically and continuously developed and secured.<br>Chapter 5, § 6 mandates that the social welfare board should familiarise itself with the living conditions of older people in the municipality and provide information about social services activities through outreach programmes. Additionally, the municipality is required to plan initiatives for older adults in collaboration with the region and other community organisations and bodies. |
| | Act (SFS 2003:192) on joint boards in health care and social care | § 1 specifies that municipalities and regions may take care of matters of general interest related to their respective areas or members.<br>§ 2 clarifies that regions and municipalities can only collaborate under this law if data from both parties is included in the joint committee's area of responsibility.<br>§§ 36 and 37 include special provisions on joint boards and contractual cooperation, respectively. Specifically, § 37 allows a municipality or region to enter into an agreement to have its tasks carried out in whole or in part by another municipality or region. |
| **Ministry of Social Affairs** | S2011/11027/FST 2011-12-15 | The Government has approved an agreement on integrated healthcare for the sickest older individuals. |

Sources: The authors' own compilation of legal provisions, 2023.

## 5. Empirical outcomes

This section presents the results of a literature review on the coordination of integrated elderly care in Sweden between 2000 and 2022. During the review, several articles came to light that did not explicitly focus on coordination but, nevertheless had critical implications for it. After analysing the articles' content, they were classified into different coordination mechanisms. In some cases, it was challenging to decide which mechanism to assign an article to as it dealt with two or more coordination mechanisms. In such cases, the conclusions drawn in the article decided about assigning it to the appropriate category. The outcomes of the review are categorised into five categories, presented in Figure 1 in section 2: 5.1 Plan/programme, rules, and standardised work processes; 5.2 Objects and representation; 5.3 Roles, standardisation of skills, and direct supervision; 5.4 Routines and standardisation of outcomes; and 5.5 Proximity, feedback, and adjustments through mutual communication.

### 5.1 Plan/programme, rules, and standardised work processes

The selected empirical studies on plans, rules, and standardised work processes focused on various aspects, including programmes, strategies, task execution, and assigning responsibilities. This category also encompasses allocating financial resources (predictability) and the agreements between all parties involved in eldercare (shared understanding) regarding how to develop care services for the very ill older adults.

Øvretveit et al. (2010) conducted a qualitative investigation of an integrated health and social care system in Norrtälje, Stockholm Region, and how it was established. Their research aimed to answer three questions: (1) What are the specifics of the integrated care organisation that was created and how does it differ from the previous system? (2) Which actions were taken to establish the new organisation, and what facilitated or hindered them? (3) How has the organisation and its context evolved over time? The authors utilised a grounded theory approach and the Pettigrew context-process model to analyse their data, revealing various stakeholders' influence. Thus, all parties involved needed to be open to change. The authors discovered that initial coordination at the macro level, established through new laws and directives, was effective. However, these structural regulations did not introduce the integration of clinical care. It was necessary to foster health and social care integration at the micro level by altering the organisational culture to achieve this. Øvretveit et al. (2010) identified some structural changes that could potentially enhance clinical care and reduce healthcare costs, but they did not have evidence to confirm this. Therefore, the authors concluded that "coordinated action is needed at different levels and types to achieve coordinated patient care" (p. 120).

One year later, the same group of scholars, Hansson et al. (2011), described "the formation and structure of coordination within the consortium and assessed the intermediate impact on care processes and client outcomes" (p. e132). They aimed to answer the following questions: (1) What are the main arrangements established for client coordination in the consortium? (2) Which contextual factors helped and hindered coordination? (3) To what extent has the consortium resulted in new coordination arrangements, procedures, and ultimately, better client outcomes? The authors used Pettigrew and Whipp's model of strategic change. Hansson et al. (2011) conducted 12 structured interviews with key representatives of different organisational levels during the development of the consortium's formation and structure by planning its cooperative arrangements and observing the consortium's intermediate and final outcomes. They also studied administrative documents, plans, and service statistics to note changes. This study provided knowledge about developing coordination between health and welfare services for older adults. The authors concluded that client-level coordination roles should be used in each sector in cases where full structural integration between health and social care services did not work. Moreover, the county's central purchasing organisation focused more on the volume and cost of services and payments for specific services to various units than on improving the quality of services

for seriously ill older adults. The above proved to be a hindering factor for coordination. An additional lesson from the micro-level outcomes proved crucial: complete integrated care was possible if steering groups from both services applied a bottom-up approach that also included macro management levels.

Nyström et al. (2014) focused on large-system transformations (LST), their content, and facilitation strategies. Growing complexity over time required more structure and better coordination to improve the lives of the most seriously ill older people in Sweden. Large-system transformations (LST) were defined as "interventions aimed at coordinated, system-wide change affecting multiple organisations and care providers to improve the efficiency of healthcare delivery significantly, the quality of patient care, and population-level patient outcomes" (Nyström et al., 2014, p. 2). The results of this research were used to assess the impact of these strategies on the improvement of the lives of older adults. This research showed that

a) the programme management team involved very different groups of stakeholders and actors;
b) regional improvement trainers, regional strategic management teams, and national quality registers were applied;
c) financial incentives and annual updating of contracts were also used;
d) various training sessions were introduced;
e) participants within the programme intensively communicated with each other; and
f) monitoring and measuring the effects were also introduced.

All these efforts caused progress to be achieved in most of the target areas, but these strategies could not be translated into achieving well-coordinated care for older adults (Nyström et al., 2014, p. 13ff).

Rämgård et al. (2017) presented the findings of seven action research projects conducted in the Scania Region of southern Sweden. The projects involved various professional groups and aimed to improve older adult care at different administrative levels and geographical scales. Participatory health research (PHR) methods were used, including individual and group reflection phases with colleagues and mixed groups at the regional level, allowing for mutual learning and improved cooperation between health and social care professions. The PHR approach focused on values and empowering groups with a low professional status. The authors highlighted the importance of the autonomy of local and regional structures and the need for reflective dialogue between professional groups to improve older adult care. However, despite some policy changes at the regional level, the authors observed that the hierarchies for staff in the health and social care system for older persons remained largely unchanged. They argued that changes in national policy must be combined and coordinated with changes at the local level to achieve tangible improvements in care services for older adults.

Szücs and Kjellberg (2022) described three types of coordination used in public

administration: (1) hierarchy, (2) markets, and (3) networks. Depending on which political block was in power after the elections, these types of coordination were visible in daily practice. For example, before the 1991 general elections, the social democratic government prepared an eldercare reform. However, they lost the elections, and the centre-right party took over, introducing the Community Care Reform (CCR) in 1992, which decentralised and deregulated eldercare. After the 2006 general election, the centre-right party took over again and continued the reform initiated in 1992. This time, the government used the model of vertical coordination by markets. However, the transformation of eldercare coincided with the external influences of New Public Management (NPM), widespread worldwide. As a result, the centre-right government introduced the Act (SFS 2008:962) on Freedom of Choice system, which became the new coordinating mechanism.

Consequently, the vertical coordination of health and social care for older adults by markets turned into a mixed model based on centralised politics and deregulating NPM. In 2010, the centre-right party won the general elections and introduced a decentralisation model. According to the document issued by the Welfare Department (S2011/11027/FST) regarding the approval of the agreement on coherent care and care for seriously ill older people, the external check regulation of the national performance management system (PM) improved through central agreements with non-government organisations (NGOs). Subsequently, the government coordinated eldercare through networks. In the 2014 and 2018 general elections, the social democrats won and governed according to their ideology, entailing further centralisation through a hierarchical coordination model. The social democratic government introduced the Act (SFS 2017:612) on Cooperation on Discharge from Inpatient Healthcare, which may be viewed as a legal paradox. Stakeholders simultaneously demanded centralisation and decentralisation through cooperation at the local level. The study's authors aimed to analyse "how sustainable governance can be achieved by horizontally integrating care services for older people through collaboration in coordination bodies" (p. 72). They posed the following questions: "How is collaboration on integrating care governance for older people systematically achieved and sustained? How have monitoring and reviewing horizontal collaboration changed (due to increasing regulation and vertical coordination of health system policy through hierarchy, markets, and networks)? Why do some collaborations on integrating services succeed and others fail?" (p. 72). They concluded that for an endeavour to succeed, the coordinating body must (1) designate the target group, provide leadership, establish rules for communication within the group, inspire confidence among participants, and clearly identify the qualitative benefits of participating in horizontal integration; (2) have two types of democratic accountability in monitoring and systematic reviews: internal controls that hold board members accountable, and external controls that regulate democratic accountability vertically. There was evidence of a gradual increase in dependence between external and internal controls due to changes in centralisation policy. External hierarchical accountability became increasingly linked to internal political and administrative

behaviour for monitoring and review; (3) systematically achieve "management of the horizontal integration of care services according to the level at which the main leaders themselves, especially as political or administrative stakeholders, carry out monitoring and review" (p. 80). However, the COVID-19 pandemic showed the opposite effect, as strategic coordination bodies failed to hold local and regional governments accountable for failing to ensure the safety of older adults.

To summarise, five empirical studies meeting the selection criteria were found in this category. Øvretveit et al. (2010) and Hansson et al. (2011) demonstrated that while initial structural coordination at the macro level through state legislation or other regulations and directives was effective, it did not result in integrated care for seriously ill older individuals. Only the integration of health and social care at the micro level had a minimal positive impact. These studies suggest that if structural integration fails, client-level coordination should be implemented, and a bottom-up approach should be introduced into the macro-levels of older adult care management. Budget concerns should not compromise the quality of care services, but this was observed to be the case. Nyström et al. (2014) and Rämgård et al. (2017) found that while many stakeholders and financial incentives were involved in the programme to improve integrated care for older adults, hierarchies remained the same, negatively impacting on cooperation among professions. Szücs and Kjellberg (2020) identified that the coordinating body must designate the target group, establish its leadership, and set communication rules.

Furthermore, democratic accountability involved internal and external controls that complemented each other, especially within the policy of centralisation. A large coordinating body significantly impacted managing the horizontal integration of care services. However, integrating health and social care services for older adults needed to be better coordinated, and while some progress was made, more work is needed.

### 5.2 Objects and representations

Okhuysen and Bechky (2009) state that objects and representations refer to documents such as records, admissions and discharge forms, and clinical guidelines.

Kjellberg and Szücs (2020) focused on the introduction of the new Collaboration Act (2017: 612). They stated that "This legislation shortens the time before the relevant local municipality becomes liable for payment of hospital charges from five to three days" (p. 234). Their qualitative research aimed "to explore contemporary policy responses where coordination and collaboration are important features in dealing with the complexities of integrated social and health care for older people in Sweden" (p. 232). The study involved interviewing nine strategically selected stakeholders who shared their opinions on the new Collaboration Act, which regulates the discharge of older people from hospitals in need of both health and social care. This regulation "gave rise to a blame game" (p. 236) as hospitals "want to get rid of these patients, and there is someone else [the municipality] who must bear that cost" (p. 236). Kjellberg and Szücs (2020) emphasised the lack of a clear definition of the person perceived to be ready for

discharge from hospital. The authors applied thematic analysis, exploring sectoral and interorganisational collaboration while focusing on trust, defined as cooperative advantage. The article highlighted the lack of trust at political, strategic, and interprofessional levels. Respondents had two opposing lines of argumentation: some believed that one government body should be responsible for health and social care.

In contrast, others considered the recently implemented national policy that assumes greater cooperation between local governments and obliges them to sign joint local agreements as correct. The article investigated the cooperation of integration of health and social care services for older adults. The advocacy of restructuring the care system for frail older adults seemed paradoxical because, on the one hand, there was an expectation of increased centralisation. On the other hand, there was an expectation of increased coordination and broadly understood cooperation at the local level. These approaches were mutually exclusive.

In summary, the authors showed that even strategically selected stakeholders shared a critical view of this legislation and disagreed on its effectiveness in improving the coordination of care services for seriously ill older persons.

### 5.3 Various roles, direct supervision, and standardisation of skills

The collected studies identified coordinating mechanisms that Okhuysen and Bechky (2009) explained as distinct roles and by Mintzberg (1979) as the standardisation of skills and direct supervision. These theoretical concepts provided insights into how integrated health and social care services were coordinated when different professions worked together to provide services to the most seriously ill older persons.

#### a) The role of Registered Nurse

Karlsson et al. (2009) investigated the work environment experiences of Registered Nurses (RNs) in residential care homes for older persons, such as sheltered housing, retirement homes, and group dwellings for older persons with dementia (p. 265f). RNs are required to have completed at least a three-year programme resulting in a bachelor's degree. They are in a unique situation as they have an office in a special unit of the residential care home or in a separate organisation, making them subordinate to the residential care home manager or the manager of a separate organisation. They are also expected to pay visits to the elderly in their residences. The research shows that RNs positively experienced a work environment where the border between nursing care and social care was clearly defined. However, they often felt frustrated as they were expected to "be everywhere and to know everything" and coordinate work, making them feel like "lonely fixers" (p. 265-269). RNs also experienced difficulties in cooperating with physicians when they discharged older persons from the hospital without asking for the RN's opinion regarding opportunities for nursing care provision within residential care homes. The specialist education did not prepare RNs to provide nursing care for older adults living in residential care homes. Therefore, RNs needed comprehensive

development in many fields of nursing. The research indicates that RNs did not have enough time for this compared to other specialist nurses who have completed a master's degree. Thus, competency development in nursing addressed to RNs is a necessary condition to avoid frustration and ethical distress within a flexible organisation. In addition, the profession is heavily feminised, with only 10% of men working as RNs. It would be beneficial to encourage more men to work in nursing services.

This topic was further explored by Josefsson & Hansson (2011), who investigated registered nurses' (RNs) perceptions of their leadership, their first-line management, and the organisational prerequisites of leadership in municipal elderly care. Nursing leadership was found to be a key factor affecting care quality, but it was in crisis in municipal older adult care. The study aimed to answer three questions: What do RNs think of their leadership? What do RNs think of their immediate line management? What do RNs think of the leadership's organisational prerequisites? Using a systems theory approach, which focused on the organisational prerequisites of municipal older adult care, such as facilitating communication between different hierarchical levels, supporting those involved in cooperation, improving coordination, defining clear roles, transparent decision-making, and providing staff development opportunities, the authors conducted a questionnaire survey. The study found that the RNs' role needed to be clarified, and they needed opportunities for leadership development in clinical nursing. Instead of receiving support and coaching from their first-line managers, the participating nurses (approximately 24%) faced conflicts; furthermore, other organisational prerequisites generated more problems than solutions.

Claesson, Jonasson, and Josefsson (2021a) study explored the experiences of RNs' leadership by close relatives of older persons using municipal home care. It was found that the relatives were not always aware of the differences between the roles of registered nurses (RNs) and social workers in home care for older adults. The next of kin played an important role in the lives of older adults and needed to know who to turn to if any problems arose. The close relatives were critical of the RNs' leadership and their responsibility for organising home care services for older adults. They observed that the RNs followed routines to maintain patient safety, but home care assistants did not always follow current guidelines (p. 5). The RN was perceived by the next of kin as a team leader who delegated nursing interventions to care assistants. In this role, the RN was expected to ensure that care assistants were properly trained and could carry out their duties in line with guidelines. Claesson et al. (2021a) concluded that this knowledge was crucial for the municipal organisation of care services, and that the RNs' leadership needed to be developed because the organisational preconditions did not allow the RNs to coordinate health and social care interventions effectively. The RNs balanced their professional commitment with what they could realistically achieve in practice. Clear communication and availability of the RNs were found to be fundamental in creating mutual trust and cooperation with the next of kin. This conclusion should be taken seriously by decision-makers. The professional position of RNs deserves support through education and the systematic development of their

competencies if it is expected that they will coordinate home care for older adults.

Claesson, Josefsson, and Jonasson (2021b) provided a platform for older adult patients to share their experiences with registered nurses' leadership in municipal home care. The authors interviewed 12 older individuals who perceived RNs as "their nurses," partners, and leaders in community home care. The older persons trusted RNs to take care of their needs and ensure their satisfaction. However, the interviews revealed that RNs had to possess a variety of skills to cater to the individual needs of older persons.

### b) Nurses in Home Health Care (HHC) and their opportunities for competency development

Andersson et al. (2017) described how nurses experience their competencies in home healthcare (HHC) situations. Nurses face many challenges in the homes of seriously ill patients where advanced care and treatment are very limited. Although each nurse wants to provide high-quality and safe service for older persons, service being in line with their competencies, neither their own strategies for transferring competencies between nurses nor organisational opportunities for competence development allow for that. Nurses have to share competencies with less experienced nurses to provide safe HHC. The interviewed nurses were critical towards managers' planning and following-up of competence development. It was up to nurses to take an initiative to increase their own competencies. Managers had never provided any feedback after the activities of completed competence development. The lack of appreciation and support from managers caused too many nurses to experience boredom, anger, despair, fatigue, and give up their ambitions to develop their competencies. Andersson et al. (2017) concluded that working in an unstructured and even chaotic environment could contribute to burnout and staff turnover.

### c) Nurse assistant

Maneschiöld and Lucaci-Maneschiöld (2021) drew attention to the introduction of New Public Management (NPM) and its characteristic feature of decentralisation. They used Hood's (1991) theory on NPM, which aimed to improve the quantity and quality of services in public administration, including care services for older adults. This study shed light on the impact of NPM on working environments and indirectly on the coordination of integration of health and social care services. The authors combined Hood's theory with Antonovsky's (1987, p. 166f) theory on the sense of coherence, which suggests that employees feel confident in performing their job if the stimuli from the internal and external environment are structured, predictable, and explainable, and if there are enough resources available to meet the employer's requirements and solve professional problems.

The article showed that the budget allocated to eldercare was the main limitation of care services. NPM had forced all possible organisations to save money, meaning the municipal care budget for older adults did not allow for enough staff to be hired or for personnel competency development to be paid for. Additionally, the increased

administrative burdens and continuous documentation of care tasks significantly decreased the time available for high-quality care services for older adults. These limitations caused nursing assistants to perceive their working environment as very stressful. They needed to communicate with their frontline boss frequently, but the latter were busy with documentation and planning care tasks. These working conditions were unsatisfactory for everyone, causing unnecessary conflicts, frequent staff changes, and professional burnout.

### d) The frontline managers

Hagerman et al. (2015) conducted a study based on semi-structured interviews. They found that male frontline managers (FLMs) were generally satisfied with their jobs, experiencing freedom within established limits, job satisfaction, and stimulation in their daily work. However, they lacked support from the structural conditions of the organisation to which they belonged, specifically regarding the budget. The FLMs could not influence the budget but could be held responsible for budget deficits. They also knew that any budget surplus would not be carried over to the next financial year but would instead be used to cover deficits in other units. FLMs perceived this as a conflict of interest over which they had no control. Those working in municipal aged care services claimed that the local board was politically driven, leading to unnecessary delays in decision-making.

Additionally, FLMs had no influence on the hiring of permanent staff, although staff were perceived as the most valuable and important resource for them. The frustration was mainly due to external conditions and conflicting goals. FLMs also received insufficient information from their supervisors about ongoing and planned changes, and the messages they received needed to be more incoherent. This left FLMs feeling confused, frustrated, and lacking in commitment while still responsible for running the unit. Thus, the organisational hierarchy and decision-making processes proved too long, highlighting serious coordination problems in the integration of health- and social care for seriously ill older persons.

### e) Cooperation and boundaries between professional roles within the team

Duner (2013) investigated how professionals in two teams, one in a hospital ward and the other in the homes of older people, assessed and planned for the needs of older people. The study aimed to explore how the team members perceived their teamwork, professional roles, and boundaries to identify similarities and differences between the two teams. Both teams aimed for integration and a holistic assessment of the needs of older people, which was used to plan and provide appropriate medical and social care. Achieving this required integrating team members, including formal professional positions and informal team time, to understand better and reflect on each other's roles, share professional knowledge and experiences, and promote good communication between different professions. This integration allowed team members to balance their

interdependence with the desire for professional autonomy and recognition of their unique contributions to health and social care for older people (p. 252).

In summary, this category includes nine relevant empirical studies providing insight into the experiences of healthcare and social care personnel involved in coordinating the integration of health and social care for frail older adults. Whether the research focuses on roles such as registered nurse, nurse assistant, or social worker, a common theme across all studies is the issue of poor coordination, deficits, and tensions. Karlsson et al. (2009) noted that RNs working in a residential care home were frustrated as they felt like they had to be "lonely fixers," being everywhere and knowing everything. The cooperation between RNs and physicians during discharge from hospitals was also found to be ineffective in practice. Meanwhile, Josefsson and Hansson (2011), Claesson et al. (2021a), and Claesson et al. (2021b) found that the leading role of RNs needed to be clarified, and the organisational prerequisites generated more problems than solutions. RNs had to be "multi-artists" to meet the individual needs of older adult patients. Andersson et al. (2017) and Duner (2013) found that experienced nurses had to share their competencies with less experienced nurses to provide safe home healthcare, and that a holistic approach to patients needed to be improved.

Additionally, most studies emphasised the the need for more employees and a lack of time for competency development, especially for the lowest staff in the professional hierarchy. The need for more staff on site was also a common problem. However, frontline managers perceived the problems with coordination somewhat differently. According to the authors Maneschiöld and Lucaci-Maneschiöld (2021), the main limitation of care services for older adults is the budget allocated to eldercare. Hagerman et al. (2015) argue that frontline managers in aged care services are overwhelmed with scheduling services, paperwork, and record-keeping while facing challenges with decision-making due to the political motivations of local management, resulting in delayed decisions. Moreover, politicians and superiors have increasing demands, and frontline managers bear responsibility for subordinates and clients despite having no influence in hiring permanent staff or budget allocation. No articles specifically focused on standardisation of skills were found.

### 5.4 Routines and standardisation of outcomes

Below are presented the empirical studies focusing on routines, which are understood according to Okhuysen and Bechky's (2009) definition as the ways of performing a task. These can include templates for task completion or standards that unite people and allow for a shared understanding of how a task should be conducted. This approach is similar to Mintzberg's (1979) understanding of outcome standardisation.

Sundström et al. (2017) described how Collaborative Health and Social Care Planning (HSCPC) meetings were understood by older people, family members, and professionals. The study was qualitative, and the authors employed a hermeneutic approach, interpreting data from individual interviews (n = 10) and group interviews

(n = 22) from different perspectives. Their interpretations were based on the context and their prior understanding: (1) lack of inter-professional and inter-organisational collaboration could lead to care fragmentation, and (2) HSCPC was seen as a remedy to combat this deficiency. During the analysis, they identified four themes: (1) unspoken agendas and unpreparedness, (2) security and enhanced understanding, (3) asymmetric relationships, and (4) ambiguity about the mission and need for follow-up (p. 150ff). The authors found that professionals saw joint health and social care planning as a routine in their daily work. For older adults and their relatives, it was about the further life of an older adult person, about how a seriously ill older adult person dependent on health and social care can cope with everyday challenges at home. According to the authors, "HSCPC involving several people and organisations is a costly process and should not be used as a routine approach" (p. 154). HSCPC meetings should be carefully planned and detailed, starting with the appointment of a coordinator who should prepare the HSCPC meeting and present the meeting agenda to all participants. A chairperson with the ability to conduct such a meeting should be selected. It is also necessary to carry out follow-up, and then a contact person should be appointed.

Rydeman and Törnkvist's (2006) research addressed two important topics: (1) gaps in communication and coordination during the discharge process, and (2) lack of cross-discipline teamwork in this area. The qualitative research adopted a phenomenological approach, and the authors conducted focus group interviews in primary healthcare facilities, municipal facilities, social welfare centres, and geriatric wards in hospitals between 2001 and 2002. The interviews revealed that the most frustrating thing for respondents was the lack of necessary information about the patient when services other than the hospital took over the responsibility for the care of the discharged patient. Specialists were more focused on the organisational framework of the units they worked in, such as current regulations, resource constraints, and shared guidelines, with much less attention paid to the discharged patient. The patient's wishes were deemed less important, especially in situations where the patient did not understand the plan for further care. At that time, professionals treated the patient "in a standard way" according to learned professional values.

In summary, only two empirical studies were found in this category. Sundström et al. (2017) found that Collaborative Health and Social Care Planning meetings involving multiple people and organisations were a costly process and should not be used as a routine activity due to budget constraints. These budget constraints suggest that financial considerations take priority over the well-being of seriously ill older adult individuals. On the other hand, Rydeman and Törnkvist's (2006) study revealed that respondents were highly critical when they did not receive necessary information about the patient during the discharge process. However, there is limited knowledge about other routines, templates for task completion, or other standards used in older adult care. It is possible that researchers did not receive permission to conduct such research.

### 5.5 Proximity, feedback, and adjustments via mutual communication

Okhuysen and Bechky (2009) defined proximity as the level of interaction and communication among individuals that involves accountability, predictability, and a shared understanding of the situation. Interaction among interdependent professionals involved in eldercare can result from formal integration through plans and authority, or an emergent situation can informally cause it. Mintzberg's (1979) understanding of proximity is complemented by the idea of adjustments through mutual communication. Communication occurs between various actors involved in older adult care and is a driving force for potential adjustments. Therefore, communication and feedback are seen as coordination mechanisms that improve care services.

Kirsebom et al. (2012) conducted a descriptive qualitative study to investigate the "experiences of coordination and communication within and between care settings when older persons were transferred from nursing homes to hospitals and vice versa" (p. 886) among registered hospital and nursing home nurses. They found that poor communication between nursing homes and hospitals during the admission and discharge of older adult patients undermined continuity of care and negatively impacted the health of older adults. The study highlights the need for improved communication between nurses in nursing homes and hospitals and the need for nursing home care plans to prevent unnecessary hospital transfers and premature discharges. The authors concluded that better communication is necessary to improve coordination between hospitals and nursing homes.

Hansson et al. (2017) investigated healthcare professionals' understanding of obstacles and opportunities for collaboration within social care through three focus groups consisting of a hospital physician, a primary care physician, a hospital nurse, a primary care nurse, a municipal home care nurse or assistant officer, a physical or occupational therapist, and a patient or family member representative. They discussed obstacles and communication opportunities experienced in relationships with each other, patients, and their relatives using a story about a fictitious patient. The major obstacles identified were poor communication with patients and their relatives, delayed collaboration between caregivers, lack of a person responsible for care planning, and inadequate allocation of resources to patients' needs. Hansson et al. (2017) emphasised that the lack of overarching responsibility for the patient beyond organisational borders was the most frequently mentioned issue by focus group members, occurring at societal, organisational, and individual levels. The healthcare professionals were aware of the mentioned problems, and participants suggested that healthcare management should support employees' initiatives that benefit frail older persons.

Emilsson et al. (2020) conducted a study on teamwork and its impact on coordinating health and social care services for very ill older adult persons. The authors aimed to investigate the organisation of multi-professional teams, the involvement of different professions, the reasons for the failure to improve care, and whether teamwork, collaboration, coordination, or competition was the main problem. They used the

Corbin-Strauss matrix to map the complexity and structural social context of older adult care and the interactions between the actors involved in the case study. The study concluded that creating multi-professional teams did not improve care for older adults and was not sustainable. Territorial thinking and competition among employees from each organisation contributed to the disintegration of multi-professional teams. The solution to the problem became a consolidation of problematic structures.

In summary, three articles were found to fit this category. Kirsebom et al. (2012) drew attention to serious communication problems related to the admission and discharge of older adult patients from hospitals. Communication between registered nurses in nursing homes and hospitals did not work effectively, and the introduction of home care plans was deemed necessary. Hansson et al. (2017) also highlighted serious communication issues during the cooperation between staff caring for older adult, critically ill patients, and poor communication with patients' families. Additionally, no designated person was responsible for planning care, and resource allocation to patients' needs needed to be increased.

Regarding proximity, Emilsson et al. (2020) studied teamwork to improve health and social care integration. They found that even the creation of multi-professional teams did not improve care for older adults, as employees of each organisation competed and thought territorially. Many multi-professional teams ultimately fell apart, and old structures were reinforced, resulting in failed integration.

## 6. Conclusion

This literature review aimed to identify which coordination mechanisms can be perceived as the alleged culprit of poor coordination of integrated health and social services for seriously ill older individuals in Sweden between 2000 and 2022. The classic coordination theories by March and Simon (1958) and Mintzberg (1979), and the contemporary theory by Okhuysen and Bechky (2009), were used to identify potential coordination mechanisms responsible for the poor integration of older adult care. As every research it has its strength and weaknesses.

The strength of this literature review is its discovery that our current empirical knowledge regarding the coordination of healthcare and social care integration for seriously ill older people in Sweden is surprisingly limited. It also constitutes this research's weakness because pinpointing the alleged perpetrator appears to be a risky endeavour. There is an explanation for this situation. Scientists who receive government research grants often hesitate to address issues that might be inconvenient for state, provincial, or local governments. Nevertheless, most articles used in this review indicate that the primary suspects for poor coordination seem to be high-ranking political and administrative decision-makers at the state, regional, and local levels. The review also revealed that not everything can be subordinated to austerity and increasing effectiveness and efficiency, as recommended by NPM. Caring for very ill older adult

people who require extensive medical and social services is complex, and finding tailor-made solutions can be difficult. The high-level politicians aimed to implement decentralisation, deregulation, and New Public Management (NPM) as remedial measures in response to the economic crises of the 1980s and 1990s. This move inadvertently led to the establishing of a complex political and administrative apparatus, resulting in tragic consequences for the most vulnerable, particularly older adult individuals in poor health.

Certain aspects of public life that fall under public administration's purview, such as healthcare, social services, and even the education system, should not be decentralised, even during times of severe economic crises. Regardless of their political affiliations, politicians should keep this in mind and refrain from undermining the services meant to benefit the citizens. Elected officials play a crucial role in steering the state and safeguarding the welfare of all citizens, relying on the trust placed in them by the public to fulfil their commitments. In light of this, it becomes evident that a significant increase in the national operating budget may be necessary almost immediately. This increase is essential to support the seamless coordination of integrated health and social services for older adult individuals facing severe health challenges. For this reason, it is imperative for Swedish politicians to closely scrutinise the coordination mechanisms that have been identified as potential obstacles in the endeavour to enhance the quality of care available to these vulnerable individuals.

Taking advantage of the theoretical collage I could rank the coordination mechanisms perceived as the most serious alleged culprits. The first mechanism is the "planning, programming, rules, and standardisation of work processes." Most studies have confirmed that the plan of far-reaching decentralisation and the autonomy of regional and local authorities did not contribute to the successful structural transformation of health and social care for very ill older adult people. The new laws and directives were sometimes difficult to interpret, and the introduction of NPM and deregulation resulted in growing competition between health and social care services rather than promoting integration of care services for seriously ill seniors.

This gap was further deepened by the efforts of regional authorities responsible for health services and local authorities responsible for social care to give meaning to the legal provisions at the local level. They translated the state's major objectives into local goals, prepared regional and local strategies, projects, and financial incentives to achieve them, and created applicable policies, procedures, and guidelines for specific organisational behaviours. However, all these efforts did not work as expected. The double principalship also prevented the integration of care for seriously ill seniors.

The coordination mechanisms of 'roles, standardisation of skills, and direct supervision' should be mentioned in second place. The review suggests that both organisational principals must act regarding excessive employee workloads, insufficient numbers of employees providing care services, which lead to stress, conflicts, and even burnout. Additionally, both organisational superiors are not prioritising the

development of staff competencies, such as professional care skills and management/leadership skills, due to "economic austerity". Thirdly, 'proximity, feedback, and adjustments by mutual communication' should be mentioned, as this kind of coordination mechanism is crucial for cooperation on all levels. According to Okhuysen and Bechky (2009), 'proximity' and 'feedback', as described by March and Simon (1958), are necessary conditions for good communication, which can result in valuable adjustments of legal regulations and improvement of older adult care. However, this review showed that communication only worked effectively on some levels.

Surprisingly, there is limited research on 'objects and representations' and 'routines and standardisation of outcomes', coordination mechanisms that can reveal many absurdities in caring for very ill older adult people. This type of research deserves special attention from scientists.

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# The Technical Efficiency of Slovak Water Companies: An Application of Network DEA

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**Abstract:**

The technical efficiency of water companies plays a crucial role in ensuring the reliable and sustainable delivery of clean and safe drinking water. It also influences the effective management of water and wastewater services. Services of this kind, usually provided by a monopoly supplier, offer operators no market incentives to innovate, or improve their efficiency. So, the mission of the regulatory institutions is to simulate a competitive environment. The main aim of this contribution is to use Network Data Envelopment Analysis (N-DEA) to assess and benchmark the technical efficiency of 14 water and wastewater companies offering their services in Slovakia from 2019 – 2021. The methodology of N-DEA allows us to assess the activity`s cost and delivery efficiency, and its overall technical efficiency. We show that full cost efficiency was achieved by two small and one large water companies operating in different regions. Three of the largest suppliers of water and wastewater services and one small company achieved the efficient delivery of water services. Overall efficiency was achieved by one large company in 2021 and one small company in 2019 and 2020. The outcome of our

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empirical analysis demonstrates the excellent skills of managers in technically efficient companies, regardless of company size and region. That outcome may be of interest to regulatory institutions and the management of individual water companies.

**Keywords:**
benchmarking, network data envelopment analysis, optimisation, regulation, water

## 1. Introduction

In competitive sectors, the desire for market success motivates entrepreneurs to provide goods and services of comparable quality and price. Nevertheless, where, for various reasons, the competitive environment does not work, and the products are only provided by a monopoly or an oligopoly, external intervention is essential to avoid the abuse of market power. The non-market environment also includes natural monopolies in network industries that supply the population`s basic living needs. These include the supply of power and heat, drinking water, wastewater collection and treatment, and the services related to the supply of those commodities. For this reason, continuous and high-quality security of the supply of these commodities is a fundamental and critical prerequisite for a well-functioning economy.

This paper`s contribution focuses on water regulation. Water resources are finite and, in many areas, becoming increasingly scarce. We measure and compare the technical efficiency of 14 water and wastewater companies offering water-related services in Slovakia. We use a non-parametric approach, Data Envelopment Analysis (DEA). Even though the national regulators of some countries have been using benchmark techniques to evaluate water management for around twenty years, this is not true for Central and Eastern Europe.

The history of Slovak water supply relates to German colonisation in the 14th century, especially in mining areas, where water caused problems with mineral extraction. Subsequently, groundwater, drawn from mines, was used to supply the population. One of the first water mains was opened in 1886 when Bratislava`s citizens began to be supplied with drinking water.

Until 1989, the supply of Slovakia`s drinking water and the collection and treatment of its wastewater were state tasks carried out by five state enterprise water and sewerage plants. Since 1990, these services have been supplied by the municipalities. Hence, the transformation of state-owned water and sewerage enterprises began in the early nineties. In 1995, state property was transferred to cities, and three water companies were created. Subsequently, in 2001, seven more private water companies were created after government approval. This privatisation was intended to follow certain principles. For example, to protect the public interest, the shares of municipal water companies were not supposed to be publicly traded. However, this was ignored,

and the privatisation prioritised private over public interests (Supreme Audit Office of the Slovak Republic, 2019).

Creating an efficient and effective set of markets for Slovak network industries clearly required a new regulatory framework. In 2001, the Regulatory Office for Network Industries (Úrad pre riadenie sieťových odvetví – hereafter URSO, or the Authority) was established. Its purpose is to protect consumers from abuse by monopoly power in the network industries of electricity, gas, heat, power, and water management. However, at the same time, it needs to pay attention to the return on investment in network industries so that energy and water supply are reliable and secure. In exercising its powers, the intention is that the Authority shall act independently. State bodies, territorial self-administration bodies, other public authorities or persons may not influence the Authority in exercising its powers.

The Regulatory Office for Network Industries issues generally binding legal regulations, carries out price regulation, decides on the imposition of fines resulting from the regulatory law in network industries, and imposes measures to eliminate and remedy deficiencies identified during inspection. It also concludes agreements with EU Member States' regulatory authorities to promote regional cooperation. In addition, it cooperates with the European Commission, with ministries and other central government bodies and publishes an annual report on the activities of the Office (*Act No. 250/2012 Coll. On Regulation in Network Industries*, 2012).

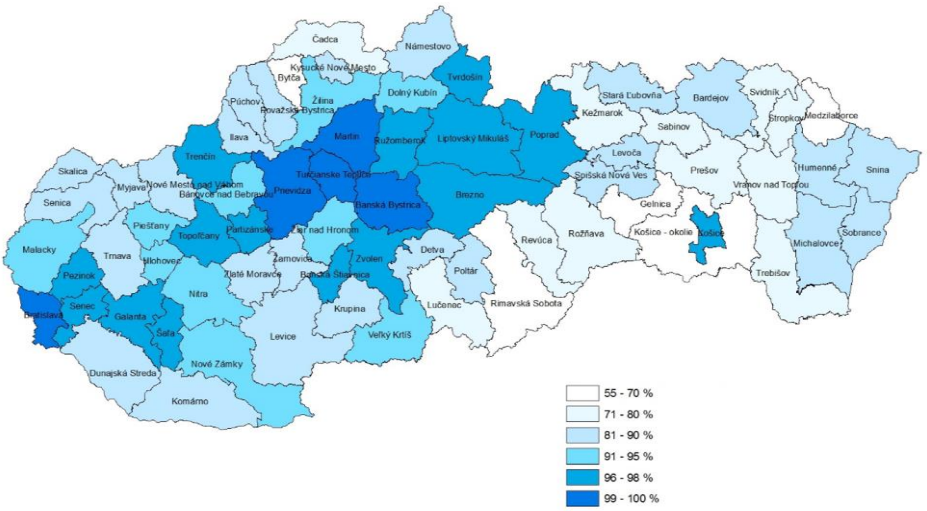
A regulated entity – for example, a water and wastewater supplier - is an entrepreneur who carries out a regulated activity. A regulated entity has the right to submit a proposal setting the price, tariff, terms and conditions, and alterations in them, to stop or interrupt the supply of goods or services, to use someone else's property for public purposes, and to request exemption from regulation, provided certain conditions are met (Regulatory Office for Network Industries, 2019, 2020, 2021).

The regulated entity must deliver goods or provide services per approved prices, tariffs, and business conditions and comply with the specified conditions for carrying out regulated activities. According to the URSO's decision, it may allow other entrepreneurs access to the network. It can submit proposals for changed terms and conditions to the Regulatory Office for decision at least one month before the start of their use. It informs clients about the complaint-handling procedure and keeps separate records for each regulated activity within the accounting framework according to the requirements of the URSO (Zwiebová, 2005).

The level of development of public water supply systems needs to be more balanced between regions. The decisive cause is the lack of underground water resources in areas such as the south of Central Slovakia and in Eastern Slovakia. Figure 1 shows the share of the population connected to the public water supply for 2020 in different districts of the Slovak Republic.

**Figure 1:**

Percentage of population supplied from public water supply in 2020




Source: Water Management Research Institute, 2021.

Overall, in 2020, 89.81% of the population got their drinking water through public water pipes, less than in most EU countries. From a regional viewpoint, the highest levels of public connection are in Bratislava, Banská Bystrica, Turčianske Teplice and Prievidza. The lowest public connection levels are in eastern Slovakia. More than 80% of drinking water comes from underground sources. Less than 20% comes from surface water sources (Water Management Research Institute, 2021).

This paper focuses on the technical efficiency of 14 Slovak water companies from 2019 – 2021. We apply a two-stage, slacked-based model (SBM) approach of Network Data Envelopment Analysis (N-DEA) to evaluate the companies` production process. The first stage assesses how cost-efficient the companies are in maintaining their infrastructure. The second stage reveals how the companies employ their infrastructure to deliver water and wastewater services to its clients. The companies studied provide water abstraction, treatment, and delivery for almost 90% of economic entities in Slovakia.

The related research questions are as follows:

1. Are Slovak water and wastewater companies using their operating costs and investments efficiently?
2. Are Slovak water and wastewater companies providing water services efficiently?
3. How technically efficient were Slovak water and wastewater companies

overall in 2019 –2021?

To the best of the authors` knowledge, this paper presents the first empirical study of the technical efficiency of the water industry in the Slovak Republic and other Central European countries. Moreover, the paper makes a significant methodological contribution through its application of advanced N-DEA to allow a phased assessment of the efficiency of the production process. While the results of the first phase of the model assess the efficiency of the operating costs and investments of the water companies, the results of the model's second phase reveal their efficiency in providing water services. In addition, the research provides evidence of economies of scale and scope in the water industry. The contribution is structured as follows. A brief literature review follows the introduction, a description of the data and model specifications, a report and discussion of the main research results, and a conclusion.

## 2. Literature review

To our knowledge, water management efficiency has yet to be dealt with in the scientific literature focusing on Central and Eastern Europe (CEE). Therefore, the contribution aims to fill the gap by applying the methodology of advanced non-parametric Network Data Envelopment Analysis (N-DEA) in the Slovak environment.

Compared to the CEE region, many studies on the topic exist in developed countries. A fundamental contribution to the study of technical efficiency in water management was carried out by Thanassoulis (2000a, 2000b). His papers introduced the basic DEA models for assessing efficiency under both constant and variable returns to scale. They outlined the use of DEA by the England and Wales regulator of water companies. His research introduced a productive conceptualisation of the issue, and the results are still the most cited in the academic literature. Thus, economies of scale are one of the most relevant issues to investigate.

The cost-effectiveness of Chilean water and sewerage companies, 2010-18, concerning their form of management, was examined by Molinos-Senante & Maziotis (2021). Their estimates were obtained using the stochastic non-parametric data envelopment method (StoNED). The above combines the advantages of data envelopment analysis (DEA), and stochastic frontier analysis (SFA). The results indicate the need to consider the quality of service delivered at the set water tariffs. On the one hand, the study showed that public water companies were the most price efficient, followed by fully private, and finally by concessionary water companies. On the other hand, over time, fully private water companies` efficiency showed an upward trend, while public water companies` efficiency deteriorated.

Another group of researchers, Lombardi et al. (2019), conducted an empirical DEA analysis of the Italian water sector concerning management and water loss. It focused on a selected sample of 68 Italian water companies from 2011 to 2013. They

found that public water companies were more efficient in buying and using inputs than mixed or private firms. When they focussed on water loss, the study showed that companies located in the north of Italy were more efficient than those in the centre and the south. In addition, they showed that small companies were the most efficient, followed by large and then extra-large companies.

The relationship between client satisfaction with water and wastewater services, demographic factors, communication of water companies with the clients, and perceived trustworthiness was studied by Tian et al. (2023). Through a survey of the UK public (n=760), the authors found that 77% of the respondents stated they were satisfied with their water and wastewater services. Statistical analysis highlighted significant demographic differences in the level of satisfaction, particularly by age, with higher satisfaction in older respondents. Citizens' attitudes towards local services` accountability and transparency were studied by Pita et al. (2021). The results of their binomial logit regressions indicate that in terms of perceived accountability and transparency of water supply and sewage, significant variables included gender, education, and satisfaction with the price respondents paid for the services.

Abbott & Cohen (2009) revealed the various measures used to gauge the levels of productivity and efficiency in the water sector regarding these measures' input and output data requirements. The literature suggests that the more advanced techniques attracted special attention. Using a DEA model and regression analysis, Liu and Fukushige (2019) investigated the efficiency of water utilities in Japan. The authors employed a two-stage analysis. The first stage involved measuring the relative efficiency of water supply and sewerage services, using DEA. In the second stage, based on regression models, the authors examined the relationships between prices and estimated efficiency scores. Salazar-Adams (2021) analysed Mexican water companies' efficiency using double bootstrap DEA. In the first stage, he calculated the efficiency of each company based on a set of inputs and outputs. In the second stage, the efficiency scores were regressed on a set of explanatory variables that influence water company efficiency. He concluded that decentralisation from the Mexican state to municipalities had not significantly increased the efficiency of water utilities because municipal and state utilities were equally efficient. However, the water reform paved the way for new organisational schemes, such as inter-municipal enterprises and privately managed enterprises. On average, the sample`s inter-municipal enterprises were more efficient than either state or municipal enterprises. On average, the sample`s several privately managed companies were the most efficient type of water utility. A possible explanation is local regulation, which may compensate for the lack of institutional capacity that often occurs in developing countries. A study by Liang et al. (2021) developed an improved two-stage network DEA model. The above assumed variable returns to scale for both weights and solution methods. In both stages the weights were determined by the share of input resources. The model was applied to eleven western Chinese provinces to measure the overall efficiency of their water resource systems, water use efficiency, and wastewater treatment efficiency, from 2008–2017. A panel Tobit regression model was

used to analyse further the key factors influencing total efficiency, water use efficiency, and wastewater treatment efficiency.

The relationships between water resources, water ecology and water environment were studied by Shi et al. (2022). A DEA window model was applied to evaluate the agricultural water resource utilisation efficiency of the (Yangtze River Economic Belt) YREB from 2010 to 2019. The paper incorporates precipitation, as an exogenous environmental variable, into analysing water resource utilisation efficiency. Lo Storto (2020) used a network DEA approach to analyse the Italian water industry. Zhou et al. (2018) investigated the efficiency of China`s water management using a non-radial, non-oriented DEA model. The Slacks-Based Measure (SBM) model can simultaneously optimise required inputs and outputs and project each unit to the "farthest" point on the efficient frontier. The regulation of the Iranian water industry, and its technical efficiency as well as productivity, measured by the Malmquist index, was researched by Nourali at al. (2014). The authors discovered that from 2008-2011, average technical efficiency reached 88% when there were variable returns to scale and 77% when there were constant returns to scale. Regarding the productivity assessment, the Malmquist index confirmed a deterioration in total factor productivity during the period analysed.

It is necessary to add that there is a vast literature revealing various determinants of efficiency of delivery of local public services. These studies began with a focus on ownership and management forms. Later, they analysed many other different aspects of service delivery, including centralisation or decentralisation, regulation, client satisfaction, economies of scale, degree of competition, contract management, and cost control.

Management forms for local public services can be classified as private management, direct public management, mixed management or inter-municipal cooperation (Albalate et al., 2021; Benito et al., 2019, 2021; Cuadrado-Ballesteros et al., 2012; Pérez-López et al., 2021; Petkovšek et al., 2021; Zafra-Gómez et al., 2020). Research papers that have studied the relationship between efficiency and the choice of service delivery mode to provide public services include Bel et al. (2021, 2010), Cuadrado-Ballesteros et al. (2012), Ferro et al. (2014), González-Gómez et al. (2014), Pérez-López et al. (2021), Zafra-Gómez et al. (2020), Mohr et al. (2010), Gradus et al. (2016) and Petkovšek et al. (2021). Privatisation of local government services is assumed to deliver cost savings, but empirical evidence from around the world is mixed. Differences in the dates of the analyses, service characteristics, and policy environment explain differences in the results of the listed studies. A genuine empirical effect of cost savings resulting from private production has not been revealed. The results suggest that to ensure cost savings, more attention should be given to the cost characteristics of the service, the transaction costs involved, and the policy environment stimulating competition rather than to the debate over public versus private delivery of these services.

Regarding other topics, Inter-Municipal Cooperation (IMC) was researched, for

example, by Teles & Swianiewicz (2018), Swianiewicz & Teles (2019), Pérez-López, et al. (2021) and Mohr et al. (2010). Czech and Slovak authors undertook most studies on the local service delivery in the CEE region. For example, Sedmihradská (2018) employed financial and accounting data of public entities to evaluate the character and magnitude of inter-municipal cooperation in the Czech Republic. She concluded that the extent of the public services provided by service contracts, or through institutionalised forms of IMC is quite limited. Most IMC was informal, e.g. exchange of experience and ad-hoc projects.

Local waste management was researched by Soukupová & Klimovský (2016) and by Soukupová et al. (2014; 2016; 2017a; 2017b; 2022). Based on data collected in 2014 from 2,065 municipalities, the regression results show that public-private partnerships are more expensive than other delivery forms. Contracting out leads to cost savings, especially for larger municipalities. The results for municipalities with fewer than 500 inhabitants show that IMC is crucial in reducing municipal costs. Meričková and Nemec (2013) and Mikušová Meričková & Nemec (2013) measured the impact of qualitative contract management factors on contracting efficiency. The results show that several important factors limit success. By far the most important is the degree of competition for the contract. Too few contracts involve a competitive bidding process. The data used to derive this conclusion cover over a decade and suggest that this problem is not improving. Change would require that our public administration systems become accountable, and intervention must focus on processes and results.

The topic we focus on – the existence of economies of scale and scope at municipal level - was also explored by Soukupová et al. (2014) and by Matějová et al. (2017). Both studies concluded that small municipalities with up to 1 000 inhabitants in the Czech Republic are likely to provide public services at higher unit costs than larger municipalities. However, there was no clear picture of the optimum size of the service delivery area. Moreover, the study by Soukupová et al. (2014), which analysed the local public services of 205 Czech municipalities with extended powers, concluded that possible economies of scale could not be clearly identified and that the size of a municipality is not a critical factor influencing the provision of local services.

A literature review reveals no research by DEA models on the technical efficiency of water companies in Central Europe. So, we applied Tone and Tsutsui's (2009) two-stage model to the Slovak water industry. The model`s first phase assesses the efficiency of the water companies` operating costs and investments. The results of the second phase reveal the efficiency of the provision of water services. Our research is also considerably influenced by the studies focusing on economies of scale and scope.

## 3. Data and model specification

As part of the analysis of technical efficiency, 14 private water companies operating in the Slovak Republic were examined. They were: Bratislavská vodárenská spoločnosť

(BVS), Trnavská vodárenská spoločnosť (TTVS), Západoslovenská vodárenská spoločnosť (ZVS), Trenčianske vodárne a kanalizácie (TVK), Podtatranská vodárenská prevádzková spoločnosť (PVPS), Severoslovenské vodárne a kanalizácie (SeVAK), Turčianska vodárenská spoločnosť (TVS), Oravská vodárenská spoločnosť (OVS), Vodárenská spoločnosť Ružomberok (VSR), Liptovská vodárenská spoločnosť (LVS), Podtatranská vodárenská prevádzková spoločnosť (PVPS), Považská vodárenská spoločnosť (PVS), Východoslovenská vodárenská spoločnosť (VVS), and Vodárne a kanalizácie mesta Komárna (KOMVaK).

Currently, there are three categories of public water operators in Slovakia. A public water operator supplying more than 50 000 inhabitants is a category I public water operator. A public water operator supplying between 2 500 and 50 000 inhabitants is a category II public water operator. A public water operator supplying less than 2 500 inhabitants is a category III public water operator. The water companies in this research are all category I operators. Currently, more than 663 regulated entities are operating public water supply and sewerage systems in the Slovak water management sector. In addition to the above 14 water companies, water infrastructure is also owned by a city, 40 municipalities, and 78 companies operating public water supply or public sewerage systems, categories I and II. Public water supplies or category III public sewage systems are currently operated by 530 small towns and municipalities (Regulatory Office for Network Industries, 2020).

The efficiency analysis uses financial and physical variables: financial data come from companies` financial statements, primarily balance sheets, and profit and loss statements. In contrast, data on physical variables was taken from the annual reports of individual water companies. Table 1 describes the variables selected for the model. They represent companies` individual inputs, outputs, and intermediate products. Variable selection was based on the empirical studies described above.

**Table 1:**

Description of variables

| *Variable* | *Notation* | *Description* |
|---|---|---|
| **Operating costs** | OPEX | Costs associated with economic activity, in EURO |
| **Investment** | I | Investments in water infrastructure, in EURO |
| **The length of the water supply network** | LN | The length of the water supply network, without connections, in km |
| **Volume of invoiced drinking water** | W | Volume of invoiced drinking water intended for implementation, in $m^3$ |
| **Number of clients** | CUS | Number of clients supplied with drinking water |

Source: Authors' own, 2023.

Table 2 presents the descriptive statistics of the variables of the Slovak water companies for 2021. Tables 3 and 4 show the descriptive statistics for 2020 and 2019. In 2021, the average operating cost reached approximately € 35 232 738. As the median level of operating costs is considerably lower, this group of water companies are highly unequal in size. There are considerable differences in the minimum and maximum values for all monitored variables. In 2021, the average investment value in Slovak water companies was € 5 726 780. The average length of the water supply network in 2020 was 2 084 km. The average volume of drinking water supplied during 2021 was 14 429 319 m3.

In comparison to 2020, the observed values had slightly decreased. In 1921, the average number of clients supplied with drinking water was 326 997. The high standard deviations of all variables reflect the very wide range of sizes of water companies.

**Table 2:**

Descriptive statistics of variables in 2021

| *2021* | *OPEX* | *I* | *LN* | *W* | *CUS* |
|---|---|---|---|---|---|
| **Mean** | 35 232 738 | 5 726 780 | 2 084 | 14 429 319 | 326 997 |
| **Median** | 18 189 805 | 2 428 767 | 828 | 8 004 248 | 157 978 |
| **Standard Deviation** | 35 422 976 | 7 425 405 | 2 144 | 14 792 417 | 322 084 |
| **Minimum** | 5 019 779 | 200 000 | 313 | 2 126 563 | 51 271 |
| **Maximum** | 107 396 501 | 26 533 096 | 6 583 | 45 348 000 | 984 608 |
| **Count** | 14 | 14 | 14 | 14 | 14 |

Source: Authors' own, 2023.

**Table 3:**

Descriptive statistics of variables in 2020

| *2020* | *OPEX* | *I* | *LN* | *W* | *CUS* |
|---|---|---|---|---|---|
| **Mean** | 34 747 193 | 5 628 027 | 2 070 | 14 581 371 | 326 524 |
| **Median** | 17 686 475 | 2 416 502 | 814 | 8 403 942 | 157 216 |
| **Standard Deviation** | 9 392 155 | 2 074 681 | 571 | 4 000 558 | 86 013 |
| **Minimum** | 4 885 588 | 200 081 | 312 | 2 162 366 | 51 359 |
| **Maximum** | 106 051 110 | 27 491 200 | 6 558 | 47 165 000 | 982 313 |
| **Count** | 14 | 14 | 14 | 14 | 14 |

Source: Authors' own, 2023.

**Table 4:**

Descriptive statistics of variables in 2019

| *2019* | *OPEX* | *I* | *LN* | *W* | *CUS* |
|---|---|---|---|---|---|
| **Mean** | 34 832 230 | 7 533 512 | 2 059 | 14 431 540 | 325 223 |
| **Median** | 17 538 945 | 1 787 383 | 881 | 8 184 500 | 155 806 |
| **Standard Deviation** | 9 410 510 | 3 297 100 | 569 | 3 922 116 | 85 596 |
| **Minimum** | 4 715 481 | 173 777 | 311 | 2 239 569 | 51 280 |
| **Maximum** | 103 928 405 | 36 719 217 | 6 524 | 46 194 000 | 976 008 |
| **Count** | 14 | 14 | 14 | 14 | 14 |

Source: Authors' own, 2023.

As mentioned above, the literature review and data availability influenced the selection of inputs and outputs. Empirical studies generally treat operational, employee, and capital costs or investments as inputs. Outputs have generally included the drinking water supply and the number of clients connected to the public water supply. Some authors have treated the length of the water supply network as an input, others as an output. Here, we apply the network DEA model, which treats the length of the network as an intermediate product.

To answer the research questions, we use a two-level network structure. The first research question is assessed by the first phase of DEA modelling that represents the infrastructure's maintenance and operation costs. The second research question is addressed by the second phase of network DEA models, which focuses on using the network to supply clients with drinking water. The third research question is assessed by the overall technical efficiency that considers both cost efficiency and efficiency of water network utilisation.

In the first phase, the water company must cover the operation and maintenance costs. The first phase input costs include employee wages, energy consumption, and capital employed. Those expenses provide a functional water supply infrastructure – the output of the first stage. The company is cost-efficient if it supplies operational and maintenance activities at minimum cost. In the second phase, the water company uses its infrastructure to supply water. Therefore, using the network DEA model, we can calculate the cost efficiency of the enterprise, the efficiency of water service provision, and the overall efficiency of the process. The network length in this model represents the connection we have noted between the two processes. In the first phase, the length of the network enters the process as an output. In the second phase, the length of the network is represented as an input. In the research, the water companies' operating costs (OPEX) and investments (I) appear as the inputs of the first phase. In the second phase,

the volume of invoiced drinking water (W) and the number of clients connected to the public water supply (CUS) are used as outputs. The length of the network (LN) is an intermediate product that is an output in the first phase and an input in the second phase. The first stage shows how the company maintains its infrastructure cost-efficiently. The second stage shows how it employs its infrastructure to deliver water and wastewater services to its clients. When using the network SBM model, assigning weights to individual stages is important. A company has two basic equally important tasks: managing costs and providing water services. Therefore, we assign them equal weights of 0.5.

An equally important issue is to specify the connection between individual decisions. There are four types of links. For example, a free link is defined as one where the connected decisions are freely determined. At the same time, continuity between input and output is maintained and is under company control. In contrast, a fixed link is defined as one with unchanged linked activities, but the intermediate product is not under the company's control. Two further types of less commonly used links are the so-called good and bad links (Tone & Tsutsui, 2009). In our analysis, we will use a free link, as all water companies can jointly determine the size of the water network.

As to model specification, Jablonský and Dlouhý (2015) characterise the stages of the production process into serial or parallel groups or a combination of the two. The serial model applied in this study assumes a multi-stage production process in which a certain output represents the input to the next stage.

In our study, a two-stage network DEA model is used. The efficiency of the first and second levels is defined as follows:

$$\max \theta_0^1 = \frac{\vec{w}' \vec{z}_0'}{\vec{v}' \vec{x}_0'} \qquad \max \theta_0^2 = \frac{\vec{u}' \vec{y}_0}{\vec{w}' \vec{z}_0} \tag{1}$$

under conditions:

$$\vec{w}'\vec{z} - \vec{v}'x \le \vec{0}' \quad \vec{u}'\vec{y}_0' - \vec{w}'\vec{z} \le \vec{0}'$$
$$\vec{v}' \ge \vec{0}', \vec{w}' \ge \vec{0}'; \vec{u}' \ge \vec{0}'$$

The overall efficiency can be expressed as:

$$\max \theta_0^0 = \frac{\vec{u}' \vec{y}_0}{\vec{v}' \vec{x}_0'} \tag{2}$$

under conditions:

$$\vec{u}'Y - \vec{v}'X \le \vec{0}'$$
$$\vec{v}' \ge \vec{0}, \vec{u}' \ge \vec{0}$$

If we assume that the output of the first stage is also the input to the second stage,

then the overall efficiency is expressed by the following equation:

$$\theta_0^0 = \frac{\vec{w}'\vec{z}_0'}{\vec{v}'\vec{x}_0} \times \frac{\vec{u}'\vec{y}_0'}{\vec{v}'\vec{x}_0} = \frac{\vec{u}'\vec{y}_0'}{\vec{v}'\vec{x}_0} \tag{3}$$

under conditions:

$$\vec{u}'Y - \vec{w}'Z \le \vec{0}'$$
$$\vec{w}'Z - \vec{v}'X \ge \vec{0}'$$
$$\vec{v}' \ge \vec{0}, \vec{u}' \ge \vec{0}, \vec{w}' \ge \vec{0}$$

If the model is written as a linear programming problem, we get the following form:

$$\max \theta_0^0 = \vec{u}' y_0 \tag{4}$$

under conditions:

$$\vec{v}'\vec{x}_0 = 1$$
$$\vec{u}'Y - \vec{w}'Z \le \vec{0}'$$
$$\vec{w}'Z - \vec{v}'X \ge \vec{0}'$$
$$\vec{v}' \ge \vec{0}, \vec{u}' \ge \vec{0}$$

If $\vec{v}'^*, \vec{u}'^*, \vec{w}'^*$ represent an optimal solution, we express the overall efficiency of the 1st and 2nd stages as follows:

$$\theta_0^1 = \frac{\vec{w}'^*\vec{z}_0}{\vec{v}'^*\vec{x}_0}$$
$$\theta_0^2 = \frac{\vec{u}'^*\vec{y}_0}{\vec{w}'^*\vec{z}_0} \tag{5}$$
$$\theta_0^0 = \frac{\vec{u}'^*\vec{y}_0}{\vec{v}'^*\vec{x}_0}$$

Where: $X$ = input matrix, $Y$ = output matrix, Z = intermediate product matrix, $\vec{x}_0$ = input´s vector of DMU, $\vec{y}_0$ = output´s vector of DMU, $\vec{z}_0$ = intermediate product vector of DMU, $\vec{v}'$ = input weight vector, $\vec{u}'$ = output weight vector, $\vec{w}'$ = intermediate product weight vector, $\theta_0^0$ total efficiency of DMU, $\theta_0^1$ efficiency of the first stage of DMU, $\theta_0^2$ efficiency of the second stage of DMU.

The traditional DEA model cannot systematically analyse the relationship between overall efficiency and the efficiency of each stage. However, the network DEA model considers the interactions between different stages and can integrate the efficiency evaluation of the network node in the system into an overall efficiency evaluation of the system. It is one of the methods applicable to the comprehensive assessment of

structural efficiency within the DMU (Tone & Tsutsui, 2009).

## 4. Results, discussion and recommendations

The technical efficiency of the Slovak water companies from 2019 to 2021, measured by the two-stage network SBM model, is summarised in table 5. The water companies' operating costs (OPEX) and investments (I) are the inputs of the first phase. In the second phase, the volume of invoiced drinking water (W) and the number of clients connected to the public water supply (CUS) are used as outputs. The length of the network (LN) is an intermediate product that is an output in the first phase and an input into the second phase. The first stage shows how the company maintains its infrastructure cost-efficiently. The second stage shows how the Slovak water companies employ their infrastructure to deliver water and wastewater services to their clients.

Table 5 shows that in Phase 1, many companies did not perform their operations and maintenance activities at minimum cost. In fact, most were not cost-efficient. From the results shown in Table 5, focusing on the values of the technical efficiency in the first phase, it can be observed that the efficiency of operating costs and investments was achieved in two small companies (Vodárne a kanalizácie mesta Komárna – KOMVaK, Vodárenská spoločnosť Ružomberok – VSR) and one large company (Východoslovenská vodárenská spoločnosť – VVS). While the eastern Slovakia company VVS is amongst the largest water companies operating in Slovakia, KOMVaK, operating in north Slovakia, and VSR, operating in central Slovakia, are amongst the smallest water companies. The first phase efficiency results strongly suggest that most water companies have much scope to improve their performance.

In the second phase, water is distributed through the supply network, and the outputs are the volume of drinking water supplied to clients and the number of clients connected to the public water supply. For the whole period under consideration, three companies were recorded as technically efficient in providing their water and wastewater services: Bratislavská vodárenská spoločnosť (BVS), Západoslovenská vodárenská spoločnosť (ZVS), and Východoslovenská vodárenská spoločnosť (VVS). All three companies, BVS, offering services in the capital Bratislava; ZVS, operating in the western part of Slovakia; and VVS, supplying water services in eastern Slovakia, are amongst the largest water and wastewater services suppliers. These three large companies were joined in 2019 and 2020 by a small Vodárenská spoločnosť Ružomberok – VSR operating in central Slovakia. The above validates that the efficiency of water and wastewater companies can also be achieved by smaller companies.

**Table 5:**

Technical efficiency of water companies in 2019 – 2021 assessed by a two-stage DEA model

| DMU 2021 | Efficiency of phase 1 | Efficiency of phase 2 | Overall efficiency | Ranking |
|---|---|---|---|---|
| **BVS** | 0.18 | **1.00** | 0.59 | 11 |
| **TTVS** | 0.23 | 0.26 | 0.25 | 27 |
| **ZVS** | 0.11 | **1.00** | 0.55 | 12 |
| **TVK** | 0.37 | 0.16 | 0.19 | 29 |
| **PVS** | 0.38 | 0.16 | 0.19 | 32 |
| **SeVaK** | 0.18 | 0.31 | 0.28 | 22 |
| **TVS** | 0.56 | 0.14 | 0.19 | 33 |
| **OVS** | 0.51 | 0.12 | 0.16 | 38 |
| **VSR** | 0.89 | 0.54 | 0.66 | 8 |
| **LVS** | 0.48 | 0.09 | 0.12 | 42 |
| **SVPS** | 0.16 | 0.78 | 0.51 | 18 |
| **PVS** | 0.44 | 0.35 | 0.37 | 19 |
| **VVS** | **1.00** | **1.00** | **1.00** | 3 |
| **KOMVaK** | **1.00** | 0.35 | 0.51 | 16 |
| **DMU 2020** | **Efficiency of phase 1** | **Efficiency of phase 2** | **Overall efficiency** | **Ranking** |
| **BVS** | 0.22 | 0.99 | 0.61 | 10 |
| **TTVS** | 0.26 | 0.26 | 0.26 | 25 |
| **ZVS** | 0.08 | **1.00** | 0.54 | 14 |
| **TVK** | 0.36 | 0.16 | 0.19 | 31 |
| **PVS** | 0.40 | 0.16 | 0.19 | 30 |
| **SeVaK** | 0.17 | 0.31 | 0.28 | 23 |
| **TVS** | 0.53 | 0.14 | 0.19 | 34 |
| **OVS** | 0.51 | 0.12 | 0.16 | 39 |
| **VSR** | **1.00** | **1.00** | **1.00** | **1** |
| **LVS** | 0.49 | 0.09 | 0.12 | 41 |
| **SVPS** | 0.17 | 0.78 | 0.51 | 15 |
| **PVS** | 0.42 | 0.35 | 0.37 | 20 |
| **VVS** | 0.63 | **1.00** | 0.82 | 5 |
| **KOMVaK** | **1.00** | 0.52 | 0.68 | 6 |
| **DMU 2019** | **Efficiency of phase 1** | **Efficiency of phase 2** | **Overall efficiency** | **Ranking** |
| **BVS** | 0.25 | **1.00** | 0.63 | 9 |
| **TTVS** | 0.26 | 0.26 | 0.26 | 26 |
| **ZVS** | 0.10 | **1.00** | 0.55 | 13 |
| **TVK** | 0.36 | 0.17 | 0.20 | 28 |
| **PVS** | 0.38 | 0.16 | 0.19 | 35 |
| **SeVaK** | 0.17 | 0.31 | 0.27 | 24 |
| **TVS** | 0.54 | 0.14 | 0.19 | 36 |
| **OVS** | 0.53 | 0.12 | 0.16 | 37 |
| **VSR** | **1.00** | **1.00** | **1.00** | 1 |
| **LVS** | 0.51 | 0.09 | 0.12 | 40 |
| **SVPS** | 0.17 | 0.78 | 0.51 | 17 |
| **PVS** | 0.21 | 0.35 | 0.31 | 21 |
| **VVS** | 0.97 | **1.00** | 0.98 | 4 |
| **KOMVaK** | **1.00** | 0.51 | 0.67 | 7 |

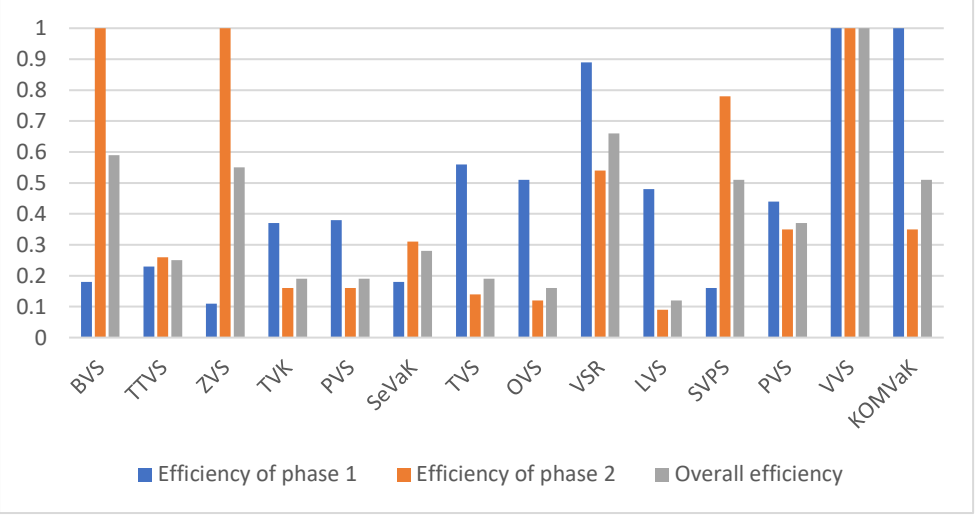
Note: Bratislavská vodárenská spoločnosť (BVS); Trnavská vodárenská spoločnosť (TTVS); Západoslovenská vodárenská spoločnosť (ZVS); Trenčianske vodárne a kanalizácie (TVK); Podtatranská vodárenská prevádzková spoločnosť (PVPS); Severoslovenské vodárne a kanalizácie (SeVAK); Turčianska vodárenská spoločnosť (TVS); Oravská vodárenská spoločnosť (OVS); Vodárenská spoločnosť Ružomberok (VSR); Liptovská vodárenská spoločnosť (LVS); Podtatranská vodárenská prevádzková spoločnosť (PVPS); Považská vodárenská spoločnosť (PVS); Východoslovenská vodárenská spoločnosť (VVS); Vodárne a kanalizácie mesta Komárna (KOMVaK).

Source: Authors' own, 2023.

According to the results shown in Table 5, the Slovak water and wastewater companies` overall efficiency levels were reached only by Východoslovenská vodárenská spoločnosť (VVS) in 2021 and by the small Vodárenská spoločnosť Ružomberok (VSR) in 2019 and 2020. The outcome of our empirical analysis of overall technical efficiency demonstrates excellent managerial skills concerning cost efficiency, efficient use of their capital and efficient water service provision, regardless of their size and the region in which they operate.

**Figure 1:**

Technical efficiency of the water companies in the Slovak Republic 2021

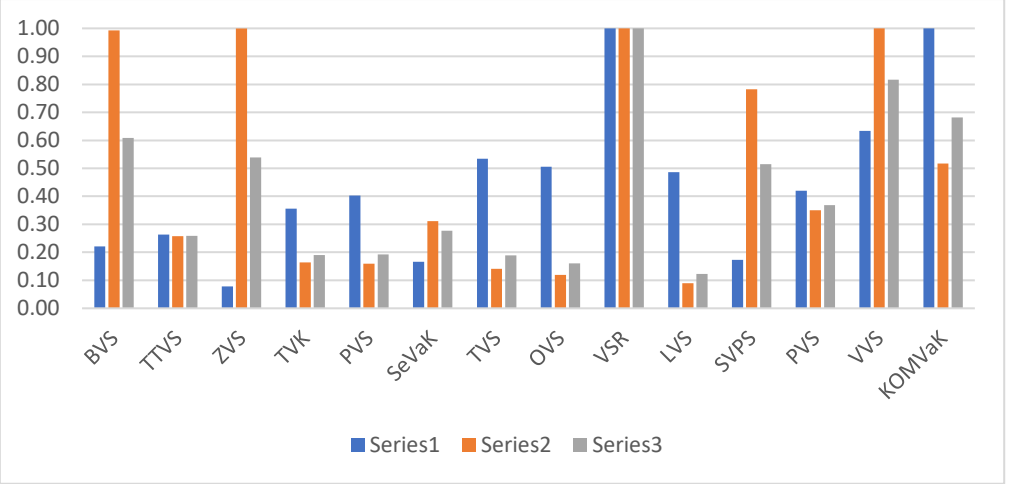



Source: Authors' own, 2023.

Figure 1 shows the 2021 efficiency ranking of water companies. The best result was achieved by Východoslovenská vodárenská spoločnosť (VVS), which was a fully efficient production unit in both phases of the process, and therefore also in overall efficiency. VVS is one of the largest water companies operating in eastern Slovakia. The supplier Liptovská vodárenská spoločnosť (LVS) recorded the lowest efficiency score, only 12%.

**Figure 2:**

Technical efficiency of water companies in the Slovak Republic 2020

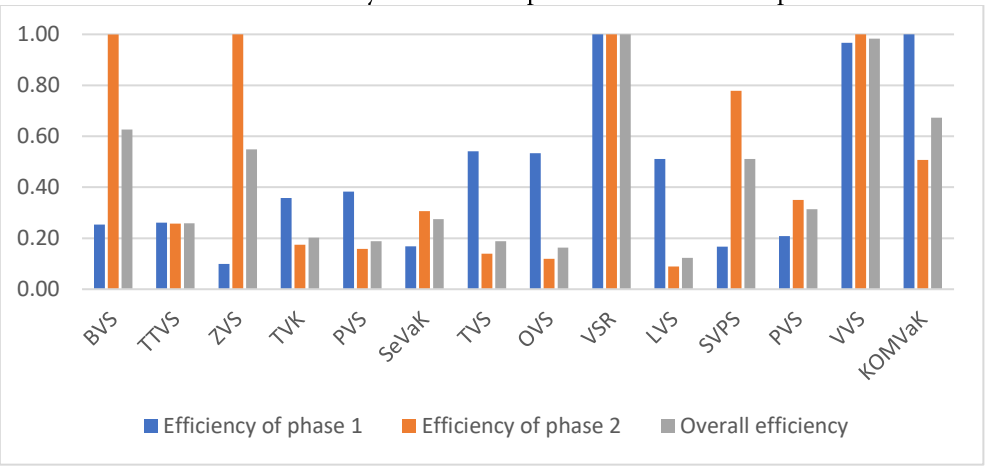



Source: Authors' own, 2023.

Figure 2 shows the 2020 ranking of Slovak water companies by the two-stage DEA model. Overall efficiency was reached by the small Vodárenská spoločnosť Ružomberok (VSR), while again the worst performing water company was Liptovská vodárenská spoločnosť (LVS).

**Figure 3:**

Technical efficiency of water companies in the Slovak Republic 2019




Source: Authors' own, 2023.

Figure 3 illustrates the 2019 ranking of water companies, and it is interesting to note that the best performing water company was Vodárenská spoločnosť Ružomberok (VSR), and the worst performer, as in the COVID-19pandemic year, was Liptovská vodárenská spoločnosť (LVS).

The results reported above confirm the importance of cost management for water companies' performance. However, price and other regulations are also critical in determining outcomes. The Regulatory Office for Network Industries regulates the water management sector. The regulation covers a series of areas, including the public water supply and public sewerage, as well as the services dealing with the use of surface water. The regulated activity is the production, distribution, and supply of drinking water through the public water supply system, and the removal and purification of wastewater through the public sewer system. Also covered is the abstraction of standing and flowing water from watercourses and their hydroelectric power potential. If sufficiently economically important, the Banska Stiavnica-headquartered Slovak Water Management Company (Slovak Vodohospodársky podnik), a regulated state monopoly, manages surface water in lakes and rivers.

Our analysis period covered the period of the COVID-19 pandemic. Water companies adopted measures to minimise its negative impacts in a situation where the required volume of drinking water, wastewater removal and treatment was little changed from the pre-pandemic period. However, there were unexpected, challenging situations, including an increase in costs, including a significant increase in the costs of construction works and materials, increases in the cost of personal protective equipment and testing employees, employee absences due to COVID-19 or related quarantines. The pandemic had widespread negative impacts throughout the industry, some of which may adversely affect future capacity.

As declared in studies by Pita et al. (2021), Tian et al. (2023) and Lombardi et al. (2019), the role of technical efficiency in water companies covers several important aspects, such as limited resource utilisation and sustainability, client satisfaction, infrastructure maintenance and water quality, energy efficiency, reduction of water losses, data monitoring and analysis, cost control, and compliance with regulations.

Technical efficiency involves maximising available resources, such as water sources, treatment facilities, energy, and human resources. Efficient water companies optimise these inputs to produce the desired outputs, minimising waste and costs. Technical efficiency is crucial for the long-term sustainability of water resources. Efficient water management practices, such as water recycling and reuse, can help conserve water supplies, especially in regions facing water scarcity. In the case of the Slovak water companies, Figure 1 reveals the lack of underground water resources in areas such as the south of Central Slovakia and in Eastern Slovakia.

As stated by Pita et al. (2021) and Tian et al. (2023), efficient water services contribute to client satisfaction. Reliable water supply, consistent water quality, and responsive client service are all aspects of technical efficiency that can enhance client

trust and loyalty. Unfortunately, in the case of Slovakia, no available data exists that would allow access the client satisfaction; it might be one of the research gaps for the future.

Water companies must maintain and upgrade their infrastructure, including pipes, pumps, treatment plants, and distribution systems, to ensure they operate at overall efficiency. Regular maintenance and investment in infrastructure are essential to prevent leaks Lombardi et al. (2019), reduce energy consumption Chen et al. (2023), and extend the lifespan of assets. Technical efficiency is closely linked to the quality of the water supplied. Water treatment processes must efficiently remove contaminants and pathogens to ensure safe drinking water for consumers. Efficiency in this context means achieving high water quality standards while minimising waste and energy use.

Water treatment and distribution can be energy-intensive processes. Water companies should strive to use energy-efficient technologies and practices to reduce their carbon footprint and operational costs. Energy-efficient pumps, renewable energy sources, and optimised treatment processes can contribute to technical efficiency. Energy-efficient production processes became inevitable in light of the climate crisis and war conflicts.

Water companies often face challenges related to water loss through leakage in distribution systems Lombardi et al. (2019). Technical efficiency involves minimising these losses through effective monitoring, maintenance, and replacement of ageing infrastructure. Reducing water losses not only conserves resources but also saves money. Technical efficiency relies on data collection, monitoring, and analysis. Water companies need accurate data on water quality, consumption patterns, infrastructure performance, and energy use to identify areas for improvement and make informed decisions.

Water companies must adhere to regulatory standards and environmental guidelines. Achieving technical efficiency is essential for meeting these requirements designed to protect public health and the environment. Compliance can also help avoid costly fines and legal issues. Achieving technical efficiency helps control operational costs, which is critical for public and private water companies. By optimising processes and resource utilisation, water companies can provide affordable services to consumers and maintain financial stability.

## 5. Conclusion

Water is the most essential resource of the planet, without which no human can survive. However, water resources are finite, and are becoming increasingly scarce in many areas. The technical efficiency of water companies is essential for delivering reliable and safe water services while minimising environmental impacts and costs. It encompasses various aspects of operations, infrastructure, and resource management to ensure the

sustainability and effectiveness of water supply and wastewater treatment systems.

To the best of the authors' knowledge, the paper is the first empirical study on the technical efficiency of the water industry not only in the Slovak Republic but also in the Central European countries. Moreover, it is an application of advanced N-DEA that allows the assessment of the efficiency of the production process in its following phases. The two-stage network DEA (N-DEA) model provides a thorough overview of the efficiency of the individual process of 14 water and wastewater companies offering water related services in Slovakia. Managers can use information on overall efficiency, the efficiency of individual phases, the efficiency of operating costs and investments of the water and wastewater utilities and the efficiency of the water and wastewater-related services. The technical efficiency of operating costs was achieved in two small companies (Vodárne a kanalizácie mesta Komárna – KOMVaK, Vodárenská spoločnosť Ružomberok – VSR) and one large company (Východoslovenská vodárenská spoločnosť – VVS). The efficiency of water services delivery was recorded by Bratislavská vodárenská spoločnosť (BVS), Západoslovenská vodárenská spoločnosť (ZVS), and Východoslovenská vodárenská spoločnosť (VVS). All three companies, BVS, offering services in the capital Bratislava; ZVS, operating in the western part of Slovakia; and VVS, supplying water services in Eastern Slovakia, are amongst the largest water and wastewater services suppliers. Three large companies were joined in 2019 and 2020 by the small Vodárenská spoločnosť Ružomberok – VSR operating in Central Slovakia. Overall efficiency was reached only by Východoslovenská vodárenská spoločnosť (VVS) in 2021, and by the small Vodárenská spoločnosť Ružomberok (VSR) in 2019 and 2020. The outcome of our empirical analysis demonstrates excellent managerial skills concerning cost efficiency and efficient water service provision, regardless of their size and region in which they operate. It should be stressed that economies of scale and scope were not proved in our empirical investigation.

Our results are relevant for the water companies` managements and water sector policymakers. As to the Slovak institutional framework, in 2001 the Regulatory Office for Network Industries was established and, among other tasks, was ordered to protect consumers from abuse by monopoly water suppliers. At the same time, it was instructed to pay attention to the return on investment of business entities so that the supply of energy and water is reliable and secure. This fact should be appreciated, as usually in Central and Eastern European countries, the regulation of the water industry is divided between several ministries.

The results of network DEA can also motivate strategic planning by managers of the Slovak water companies aimed at increasing sustainability and resilience. For example, they could introduce incentives to improve the cost-effectiveness and efficiency of water management services. The results, at the individual stages of the production process, could help the regulatory body design policies based on financial and other incentives. We recommend using the outputs of such an analysis to determine customer price tariffs. Our future research plans aim to extend our results to the technical efficiency of Slovak water management enterprises by examining the

productivity of the water industry in greater detail.

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An abstract is a summary of the information in a document. The abstract should not exceed 250 words. It should be designed to clearly define the content of the paper. The abstract should: (i) state the principal objectives and scope of the research; (ii) describe the methodology employed; (iii) summarise results and findings; and (iv) state the principal conclusions. References to literature, bibliographic information, figures, or tables should not be included in the abstract.

#### *Keywords*

Up to 5 keywords. Keywords should generally be nouns instead of adjectives or adverbs and must be listed in alphabetically, separated by commas. Do not use abbreviations.

#### *Introduction*

The introduction should supply sufficient background information on the topic and also provide the rationale for the present study. Suggested guidelines are as follows: (i) the introduction should first clearly present the nature and scope of the problem that was researched; (ii) provide an overview of the pertinent literature used; (iii) state the research methodology employed and, if necessary, the reasons for using a particular method; and (iv) the principal results of the investigation should be stated.

#### *Literature review*

This part reviews the existing state of knowledge about the topic of the paper. We recommend checking especially publications dealing with the region covered.

#### *Methodology*

The methodology part should describe and explain all the methodological aspects of the paper, such as the methods used, data collection method, and the validity of the sample.

### *Results*
This section should contain an overall description of the topic and the present data gathered during the research project. The manuscript should utilise representative data rather than repetitive information. Data that will be referenced several times in the text should be provided in tables or graphs. All data, repetitive or otherwise, should be meaningful. Results must be clearly and simply stated as this section comprises innovative research findings for an international community of academics and practitioners.

### *Discussion*
This section presents principles, relationships, and generalisations indicated by the researcher's findings. This should not restate information present in the results section but should: (i) point out any exceptions or lack of correlation; (ii) define unresolved issues; (iii) show how the results and interpretations agree (or contrast) with previously published work; (iv) discuss the theoretical implications of the work, and any possible practical applications; and (v) summarise the evidence for each conclusion. The primary purpose of the discussion section is to show the relationships between the facts that have been observed during the course of the research. The discussion section should end with a brief summary or conclusion regarding the significance of the work.

### *Conclusions*
Conclusions summarise findings, may propose policy recommendations or future research directions.

### *Acknowledgements*
Assistance received from any individual who contributed significantly to the work or to the interpretation of the work and/or external financial assistance, such as grants, contracts, or fellowships, must be acknowledged.

### *References*
APA format (7th edition) is requested. Only significant, published references should be cited. References to unpublished data, papers in the press, abstracts, theses, and other secondary materials should not be listed in the references section. If such a reference is essential, it may be added parenthetically or as a footnote in the text. Second, the authors should verify all references with the original publication prior to submitting the manuscript. Stylistically, authors should utilise the in-text parenthetical reference system with complete references alphabetised at the end of the text.

## *2. Submission procedure*
Papers shall be submitted electronically via the on-line submission system, in the style as prescribed below.

## *3. Language editing*
Papers should be language edited, or this service can be purchased from the NISPAcee.

## *4. Paper length*

The final version of the completed paper should not exceed 7000 words.

## *5. Style*

NISPAcee requires the following stylistic points to be followed for all manuscripts.

### *5.1 Format and Language*

Papers should be submitted in RTF, DOC format and written in English. If necessary, the tables, graphs, or other graphics can be submitted separately in other formats, e.g., XLS, PDF, EPS, TIF, JPG.

### *5.2 Titles and Subtitles*

Titles should by typed in capital letters in Times New Roman size 12 and bolded. Names of authors should follow below the title in italics with a footnote indicating the author(s)' institution, city and country. Subtitles should appear in bold with only the first letters capitalised. Subtitles and the main body of the text of the paper should be in Times New Roman, size 10. New paragraphs should not be indented.

### *5.3 Keywords*

Times New Roman; size 10 font, no words in italics; Keywords: bold, colon; proper nouns, places - first letter Uppercase, e.g., Slovakia; abbreviations - all Uppercase, e.g. NGO; all other words lowercase, e.g., synthetic; comma between words; nothing after last keyword

### *5.4 Numbering Sections*

For purposes of clarity, sections and sub-sections of the text should utilise the scientific numbering system. Please note that no more than two levels of sub-sections should be used whenever possible.

### *5.5 Bullets and Numbering*

<Tab> should be used after each bullet or number prior to beginning the text, and <enter> after each bulleted or numbered sentence. Each bulleted or numbered sentence/phrase should be followed by ";" with the exception of the final point, which should end with a period (".").

Example:

- <Tab> Deciding about the organisation of the process and about the feedback to politicians; <Enter>
- <Tab> Recruitment and selection of the 'policy-making team'; <Enter>
- <Tab> Monitoring the progress, deciding about the pace and deadlines; <Enter>
- <Tab> Judging the interim drafts and products. <Enter>

### *5.6 Notes*

Note that numbers should be placed within the main body of the text in superscript. Notes should be numbered consecutively from "1" and collected at the end of the page.

### *5.7 Tables, Illustrations (Graphs, Figures)*

The tables, graphs, or other graphics should be written in English and can be submitted in the text or separately in RTF, DOC format or in other formats, e.g., XLS, PDF, EPS, TIF, JPG.

### *5.8 References*

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