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OPEN DATA AS A PART OF SMART GOVERNANCE OF CITIES

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Abstract
The paper examines the role of open data as a tool of smart governance and evaluates its practical implementation in district cities of the Slovak Republic. The study aims to examine the current state of open data use in cities and to identify the barriers to its effective use in data-driven policymaking as an innovative tool for smart governance. The research presents the results of empirical investigation conducted in 2024–2025 in Slovak district cities, including secondary analysis of municipal websites and strategies and a questionnaire survey among local municipal representatives. The results reveal a significant gap between the theoretical expectations of smart governance and administrative practice. Although municipalities generally publish certain information online, only a small proportion meet the full minimum publication requirements and can be defined as open data. The findings further indicate limited institutional capacity: most municipalities lack dedicated data management positions, rarely monitor the use of published datasets, and do not systematically employ data for policy evaluation or strategic planning. Financial constraints, accessibility issues, and low user engagement represent the most frequently perceived obstacles. The study shows that open data in local municipalities currently functions primarily as a transparency and compliance tool rather than as a mechanism for evidence-based decision-making and participatory governance. The effectiveness of open data depends not only on technological infrastructure but also on organizational capacity, data literacy, and cooperation between municipalities, citizens, and other stakeholders. The paper contributes to the debate on smart governance by demonstrating that digitalization alone does not ensure data-driven policymaking. It highlights the need for standardized datasets, institutional support, and capacity-building measures to transform open data from formal disclosure into an active instrument of governance and public policy innovation.

Keywords: open data; data-driven policies; decision-making, cities

JEL classification: R58, R10

Introduction

Digital technologies significantly influence the way local municipalities communicate and cooperate with various local actors, thereby changing the very nature and dynamics of local governance. Local municipalities are increasingly shifting their activities to the digital environment, which allows them to introduce innovative forms of cooperation and new approaches to public policy-making. As a result of this digital transformation, local governments are becoming intermediaries and coordinators who ensure the active involvement of various entities in decision-making processes. The use of data and data analytics plays a key role in this, enabling a better response to the needs of local communities and contributing to more effective and higher-quality public policy-making. This approach is part of the broader concept of smart governance, which promotes transparency, openness, and inclusiveness in public administration. The concept of smart governance represents an effort to increase the openness of public administration, manifested in three main dimensions: accessibility, transparency, and public participation (Linders, 2012; Birkmeyer, 2015; Grimmelikhuijsen et al., 2020). These aspects create the conditions for transparent dialogue, active civic engagement, and the free flow of information, thereby increasing local government accountability and strengthening trust and cooperation with the public.

Smart governance emphasizes management through the use of digital innovations, data-driven decision-making, and participatory mechanisms. Management formulated in this way helps to strengthen democratic governance at the local level. (Gil-Garcia et al., 2015; Meijer & Bolívar, 2016; Lindquist, 2022). Although some authors interpret the term "smart" primarily in the sense of digital or cybernetic solutions, the prevailing view is that a smart city is one that applies participatory governance, invests in human resources, social capital, as well as traditional and modern ICT infrastructure, and makes decisions based on data and evidence.

The transformation of cities into smart cities requires the implementation of smart governance that brings together political leadership, professional city management, the population, businesses, the non-profit sector, and various community groups. At the same time, it requires a high degree of transparency and the development of a multi-level, multi-source governance system (Vaňová, 2021) supported by digital technologies that promote participation and increase the degree of redistribution of responsibility. Open data portals, electronic public administration services, and digital feedback mechanisms contribute to better accessibility of public information, thereby reducing information asymmetry and strengthening trust between local governments and the public (Tejedo-Romero et al., 2022). In real urban conditions, the specific characteristics of the penetration of advanced information and communication technologies are reflected in the collection, creation, and publication of datasets on various aspects of life, which city management should use for informed decision-making and public policy-making, but which should also be accessible to local actors and thus serve as a basis for innovative business, community, and public benefit initiatives.

The aim of this paper is to examine the current state of open data use in cities and to identify the barriers to its effective use in data-driven policymaking as an innovative tool for smart governance. The object of the study is district cities in the Slovak Republic.

The remainder of this article is structured as follows: Section 2 concerns the theoretical background of this paper. Section 3 contains the research methodology. Section 4 presents the research findings and discusses them in comparison with the literature review and practical experience of smart cities. The conclusion summarizes the key features, as well as obstacles of

open data exploitation in governance of cities and presents some future research paths to enhance their effective use.

Open data as a part of smart governance in cities

According to the research findings of Bolívar (2015), López-Quiles & Bolívar (2018), Edelenobos (2018), access to information is the basis for effective participation of stakeholders in the management of public affairs. The quality of information predicts the success rate of public policy solutions and determines the level of transparency in local government management. In this context, the importance of high-quality information and, in particular, its availability is growing, with open data playing an important role in the public sector and public administration.

The European Commission perceives open data as information that has been collected, created or paid for by public authorities and is freely available for reuse for any purpose. (European data portal, 2022). Open data is data that should be published to the maximum extent possible and in an easily accessible form that is understandable not only to humans but also to standard computer programs. Information from specific areas of activity and competence of public authorities is collected in comprehensive and independently usable data groups, known as datasets, using open standards.

According to the central public administration portal of the Slovak Republic (Slovensko.sk, 2026) open data is data created, managed, and published by public authorities. It consists of information or data that is freely available to everyone on equal terms and can be used for any commercial or non-commercial purpose. It is made available on the internet in a structured form that allows for bulk machine processing.

Open data is all publicly produced data that is disseminated without restrictions. It encourages the government to act as an open system and communicate with its environment, which means that it is able to accept opposing views and ask for feedback. It is the basis for creating platforms and applications that facilitate collaboration between citizens in solving problems of any scale (community, city, or even country) (Simonofski et al., 2019).

To the main attributes of open data belong publishing data under open license, which refers to the right to use and distribute data. Secondly, data should be in a machine-readable format, so it is available in a format that computers and software tools can work with. Thirdly, the data should be stored in formats that do not require expensive specialized software to open. This ensures access for everyone, regardless of their financial means or technical equipment. Data should be published proactively (Tang & Jiang, 2020; Gomes & Soares, 2014).

The use of open data ensures the long-term transparency of government information and thus contributes to citizens' rights of public access to government information, which can be considered a fundamental principle of democracy. In addition, open data policy has the potential to increase participation, interaction, empowerment, and social inclusion of open data users and providers, and to stimulate economic growth (Zuiderwijk & Janssen, 2014).

The use of open data brings potential benefits both for public administration institutions themselves and for citizens. According to the European Commission (European data portal, 2022), the use of open data can contribute to strengthening the performance of the public sector and increasing the efficiency of public services. Greater efficiency in the provision and delivery

of public services can be achieved through cross-sectoral data exchange, which can, for example, provide an overview of redundant expenditure. Open data brings greater efficiency when used in real time. It allows easy access to information that improves individual decision-making. Thanks to open data portals, stakeholders can benefit from easier access to information, content, and knowledge that contribute to the development of innovative services and the creation of new business models. Social welfare can be improved as society benefits from information that is more transparent and accessible. Open data strengthens cooperation, participation, and social innovation (European Data Portal, 2022).

Open data can be a core of other innovative public governance tools, e.g. databases of shared information within local or state government. A database is a tool for collecting and organizing information. In general, it represents a set of structured data about anything (taxpayers, products, users, social service recipients, orders, etc.). It is used to store, sort, process, and retrieve information (Microsoft, 2022). However, the essence is that this data is shared among relevant public administration staff, who have it at their disposal for making decisions on relevant public policy. Another example are visualizations and applications created on the basis of the established data infrastructure, which can be used to achieve better policies and services, support the creation of new business opportunities and non-commercial solutions, optimize and digitize local governments and the practical use of datasets, ensure the effective implementation of legislation that is appropriate and readable for ordinary consumers—citizens—build transparency and openness.

Methodology

The aim of this paper is to examine the current state of open data use in cities and to identify the barriers to its effective use in data-driven policymaking as an innovative tool for smart governance. The object of the study is all 71 district cities in the Slovak Republic.

The presented research results will help to respond two research questions:

RQ1: How and to what extent do district towns in the Slovak Republic use open data as a smart governance tool,

RQ2: What barriers prevent the effective use of open data in public policymaking?

The theoretical part of the paper was prepared in the form of literature review based on the scientific papers, but the important sources to define the open data framework were the specifically oriented data portal – European data portal and portal Slovensko.sk.

The main source of data was the empirical research conducted in 2024 and 2025 in the Slovak district cities including the primary and secondary research. The secondary research focused on identification of cities that publish open data based on the review of city websites with special attention paid to the obligatory published data and information and voluntary published data and information.

The primary research was aimed to identify the attitudes of district town representatives towards building openness and the degree of implementation of openness principles in practice. In the paper, we present the research results oriented on the open data and work with them as a key instrument of transparency in the cities. The research in a form of questionnaire survey was

conducted from March to October 2024 in all 71 district towns. The respondents were repeatedly contacted in 3 rounds of e-mails with the request to fill in the questionnaire. The response rate of the questionnaire survey was 81.69%, which includes responses from 58 towns. The structure of the sample compared to the total number of district towns in the Slovak Republic is presented in Table 1: The result of the chi-square test (&=0.05) indicate that there is no statistically significant difference between the distribution of towns in the sample and in the population. Therefore, the sample can be considered representative in terms of the population size category of district towns.

Table 1: Research sample of questionnaire survey

Number of inhabitants	Research sample of district cities in cities	%	The whole number of district cities in Slovakia	%
5000-9999	7	12,07%	11	15,49%
1000-19 999	20	34,48%	24	33,80%
2000-49999	23	39,66%	27	38,03%
Viac ako 50000	8	13,79%	9	12,68%
Spolu	58	100,00%	71	100,00%

Source: Authors' own work

The primary recipients of the questionnaire were mayors and their deputies. They were also instructed that they could involve the relevant municipal expert(s) responsible for various aspects of open governance in completing the questionnaire. Given this fact, the respondents to the questionnaire survey were mayors (13.79%, 8 respondents), deputy mayors (10.34%, 6 respondents), city office chiefs (34.48%, 20 respondents), and city office experts (39.66%, 23 respondents). The professional employees of the municipal office included participation coordinators, project activity managers, heads of selected departments and sections of the municipal office dealing with selected topics of open government, and PR managers of local muncip. Most respondents had a university education (94.83%, 55 respondents), only 2 respondents had a secondary education with a high school diploma, and one respondent did not have a high school diploma. In terms of age, 41.38% of respondents belong to the 40-49 age group, 29.31% of respondents to the 50-59 age group, 17.24% of respondents to the 60 and over age group, and 12.07% of respondents to the 30-39 age group.

The secondary research was based on systematic searching and recording of data from publicly available sources - official websites of cities or specialized portals used by cities to publish open data, participatory processes, or provide electronic services to citizens (e.g., data.gov.sk, UVO, eGov portals, data platforms), i.e., so the research was based on the collection of factorographic data.

Data collection was carried out according to a predefined set of indicators focused on identifying the level of transparency, accessibility of information, public participation, and digital infrastructure of local governments. In the paper, we published specifically the collected data on open data, namely the overview of the minimum publication requirements for cities, the identification which data are published beyond the requirements and in which cities.

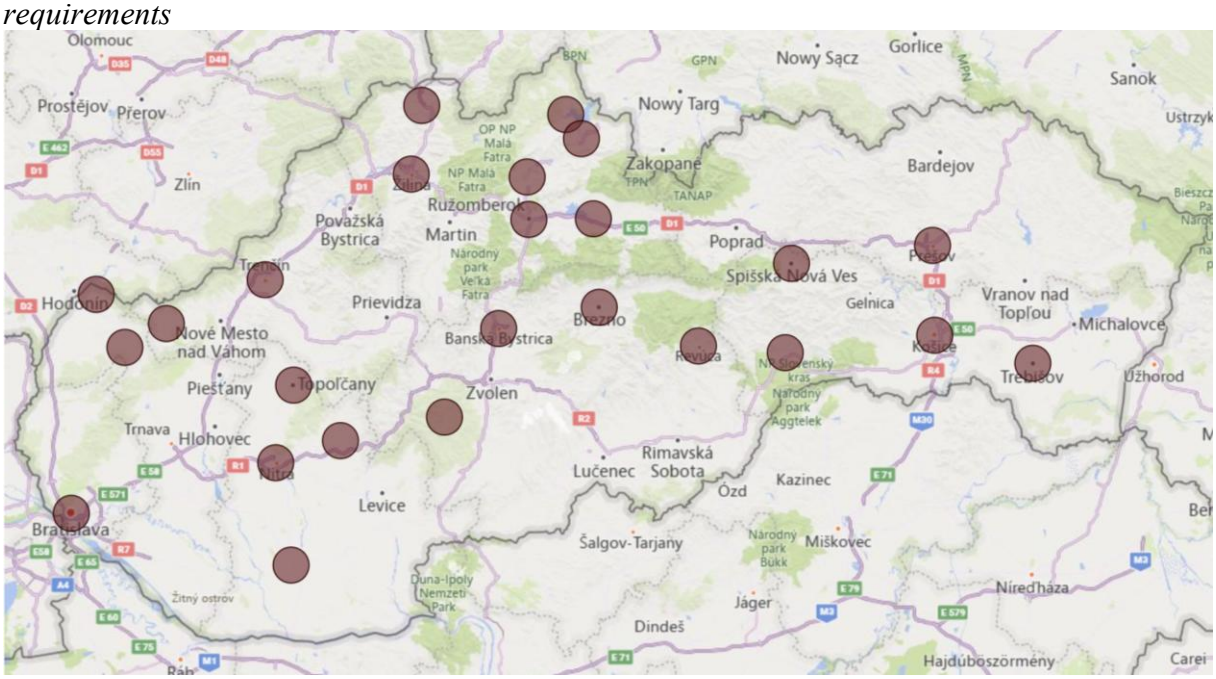
We used MS Excel and descriptive statistics to process and analyze the collected data, and we used the Chi-square test to verify the composition of the research samples.

Research results

The publication of information and some datasets is an obligatory task of the local municipalities in the Slovak Republic. They are formulated in the „minimum publication requirements for local municipalities“, which include information on the organizational structure, contact points, office hours, information on members of local government bodies, chief auditors, organizations established and founded by the local municipality, generally binding regulations, meetings of local government bodies, petitions, orders, contracts, invoices, subsidies, inspection plans, advertising devices, program budgets, small sources of air pollution, local taxes and fees, age structure of the population by street, illegal dumps, and parking permits issued (MIRRI, 2026). Some of these are published in the traditional form of notice boards, but due to technological developments, they are much more frequently published on the websites of cities, specific open data portals or accessed via mobile applications.

Based on the secondary research in all 71 Slovak district cities, the level of data publication according to „the minimum publication requirement for local municipalities “is relatively low. Only 6 cities (8.5%) publish all mandatory data. Most cities (91.5%, 65 cities) fall into the category of partially published datasets, indicating a widespread but incomplete practice of making public data available. A positive finding is that 27 cities (38%) publish data beyond the minimum publication requirement, indicating the efforts of some local municipalities to go beyond their legal obligations and strengthen the principles of transparency. The overview of the Slovak district cities which publish open data beyond the minimum publication requirements present figure 1.

Figure 1: District cities in Slovakia publishing open data beyond the minimum publication requirements



Source: Source: Authors' own work processed by Microsoft PowerBI

By the deeper analysis of the research results, the most frequently undisclosed datasets are advertising devices missing in more than 70% of cities; age structure of the population by street not published in approximately 60% of cases; illegal dumps and small sources of air pollution absenting in more than half of cities; parking permits issued published only by less than 20%

of cities, and petitions and inspection plans or detail data on contribution and budgetary organizations of cities – almost completely absent, which weakens openness to citizen participation and control and. These findings point to the need for standardization in the publication of public data, not only in terms of volume, but especially in terms of practical usability, format, and timeliness.

However, we identified also the examples of good practice in publishing data and information in 2 biggest Slovak cities:

1. Bratislava (capital city and the seat of the Bratislava region) with over 398 datasets, it is a leader in the field of open data. Its catalogue covers a wide range of data from public transport locations to investment plans to contracts and invoices.
2. Košice (2nd biggest Slovak city and the seat of the Košice region) with more than 27 datasets published in a structured form, including data on transport, the environment, and city property.

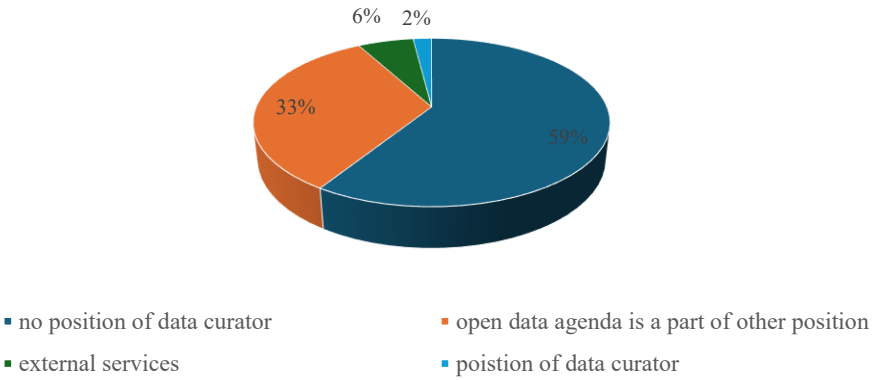
In terms of content, published open data beyond the required information include data on transport and parking, rental housing, sports and leisure, dog registration, economic management, or strategic planning. These positive examples from cities show that open data does not have to be just a fulfillment of an obligation, but can be an active management tool that strengthens public trust, encourages participation, and creates space for cooperation with citizens and businesses.

30 out of 71 cities (i.e., 42%) have created their own data portal, which is a key prerequisite for the systematic and sustainable publication of open data. Conversely, most cities (58%) do not have such a portal and therefore probably publish data only partially or in an unsystematic manner. Research on municipal websites has shown that the most commonly used solution for publishing data is the so-called eGov portal, i.e., a central electronic platform for managing local government websites. This portal provides the technical capabilities for publishing data, but often falls short of the level of standalone open data platforms that enable data filtering, export, and visualization. Many cities therefore use basic infrastructure that is insufficient to meet open data standards or the expectations of experts and citizens. The absence of a data portal may be a result of technical or personnel unpreparedness, insufficient political will or strategic vision in the area of open data, but also financial or capacity constraints in smaller municipalities. Given the growing importance of data-driven decision-making and transparency, the creation of a data portal is one of the concrete steps towards increasing the openness of local municipality.

We expand the results of secondary research with the results of primary research. The summary of answers on question how the issue of open data is handled in the organization with 4 possible answers (position of data curator, open data agenda is a part of other position, publishing and maintaining of open data as external service or no position of the data curator) presents figure 2. The respondents could select one option.

59 % of respondents indicated that they do not have this position in organization structure of municipal authority. 33% of cities have staff dealing with this issue within its agenda, but not only with this agenda as a priority, 6% respondents use external services, and 2% of municipalities have staff dedicated solely to this position. The average number of employees in the position of data curator was 3.5; the minimum number was 1 and the maximum number reported was 10.

Figure 2: Form of open data management in cities

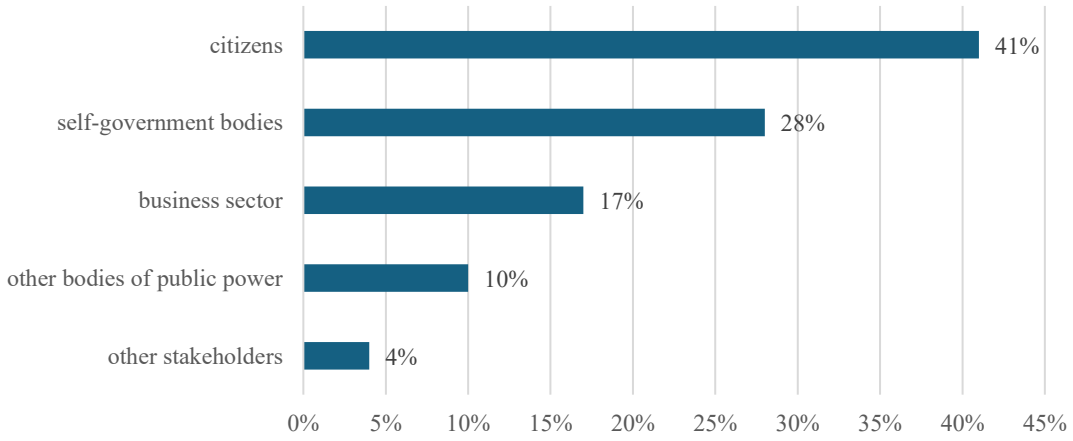


Source: Authors' own work

Due to the rapid development of information and technology and increase in demands on city administration, the next question was whether cities plan to strengthen their IT departments. The possible answers were yes or no, and if yes, the respondents were asked to indicate the number of new planned positions. Most respondents (82%) do not plan any changes, while the remaining 18% respondents plan to increase the number of employees in their IT departments by an average of 1.3 employees, with 86% respondents stating 1 employee.

Based on the closed question who are the main users of open data with options: citizens, self-government bodies, business sector, other bodies of public power and other stakeholders, we found that the users of open data are primarily citizens (41%) (Figure 3). This result indicates that citizens are interested in accessing data and actively use it. They are followed by government bodies, such as regional, local and special-interest self-governments (28%), and the business sector (17%). Open data is used less frequently by other public authorities (10%) and other entities (4%), such as the academia, political bodies, and non-profit organizations respondents could indicated as many stakeholders as they see as relevant or add other stakeholders.

Figure 3: Users of the city open data



Source: Authors' own work

Subsequently, we investigated by open question which open data (datasets) are used most frequently. The most common response (22% of respondents) was that the city does not have any evidence about this issue. To other answers about the required data, include contracts (13%), invoices (8%), less as 5 % of cities indicated data on transport, orders, taxes, population statistics, budget, waste, registry, land, and the procedure for accessing information under Act 200/2011 Coll. on free access to information. 3% of respondents stated that they do not use open data. Based on the answers to this question, it is clear that respondents consider open data to be data that is published on the basis of a legal obligation or as a recommended minimum for publication, what is not in line with „real "open data.

For the deeper analysis as well as a control question, we asked the respondents to differentiate the required data by the type of stakeholders (table 2). In relation to citizens, the most frequent response from respondents was that there is no evidence about the required data (18%). Other requested data include invoices (9%) and geographic and map data (8%). Responses that occurred in less than 4% of responses were budget and finance, public administration and services, city documents, orders, property, social data, fees, taxes, environmental data, and population statistics. In case of entrepreneurs, the most common answer was again no evidence in 27% of responses. This was followed by interest in data on public tenders and public procurement (10%) and parking and parking cards (9%). Responses with less than 3% representation were contacts, organizational structure, publication of municipal regulations, public services, data on environment, demography, etc.

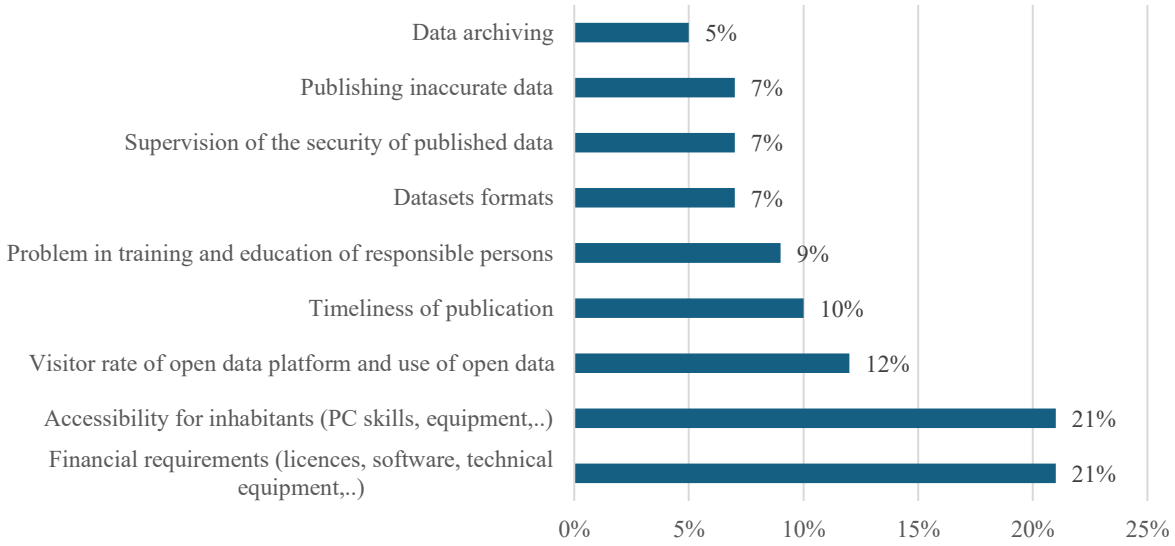
Table 2: Most required data from citizens and private sector

Citizens	% of respondents	**Private sector**	% of respondents
No evidence	18%	No evidence	27%
Invoices	9%	Public tenders and public procurement	10%
Geographic and map data	8%	Parking, parking cards	9%
News	7%	Budget and finances	8%
Parking, parking cards	7%	Agenda of building authority	5%
Local government bodies	7%	Property	5%
Contacts	5%	Invoices	5%
Agreements	5%	Agreements	5%
Transport	4,50%	Geographic and map data	4%
Data for student theses	4%	Investment plans	4%
Official municipal board	4%	Fees	4%
Digital self-government	4%	Taxes	4%
Investment plans	4%	Publication of official decisions	3%

Source: Authors' own work

To the low utilization of real open data, we asked the respondents by closed-ended question with nine possible answers to identify the greatest problems in work with open data (Figure 4). The respondents could select three the most important problems.

Figure 4: Problems in open data exploitation



Source: Authors' own work

The most frequently response was financial requirement and accessibility for residents (both 21%). This points to persistent limitations in the budgetary possibilities of local municipalities and, at the same time, to the need to improve user accessibility and comprehensibility for the public. Another problem is the low interest and use of published open data (12%), which may indicate difficult accessibility of published data, weak promotion, or a lack of motivation or ability to actively use the data. This is followed by the timeliness of publication (10%), which can reduce the credibility and practical value of open data. Conversely, the smallest problems in working with open data are data archiving (5%), publication of inaccurate data, oversight of the security of published data, and dataset formats (both 7%). The results suggest that the biggest problems in working with open data in cities are related to financing, availability, and use of data, while technical and security issues are not perceived as significant from the cities' perspective.

To get better understanding of these problems, we asked about 10 specific cases of security breaches or misuse of open data recorded by cities. The respondents should mark all forms of incidents that happened in the cities. According to the answers of respondents, 45% of cities do not record any problems with the misuse of open data, which may indicate that such incidents are rare. However, a more likely reason is a lack of a mechanism to identify and record such misuse. This is followed by cases such as misinterpretation of data (25%) and invasion of privacy (9%). The least frequent cases are: breach of trade secrets (1%), damage to personal and business interests, misuse of personal data, and discrimination against certain target groups of the population (both 3%). We did not record any responses for data loss and unlawful disclosure of data (both 0%).

Discussion

While the theoretical framework (Linders, 2012; Birkmeyer, 2015; Grimmelikhuijsen et al., 2020) assumes that open data strengthens transparency, participation, and evidence-based policymaking, the Slovak case reveals a substantial implementation gap between normative

expectations and administrative reality (Vitálišová, et al., 2022, Vitálišová, et al., 2025). Although open data is conceptually framed as one of stones of participatory and accountable governance, its practical deployment in district cities in Slovakia remains largely procedural rather than transformative.

To the key findings belong the fact that Slovak cities do not publish datasets in required extend, or published datasets which are not a real open data. Usually, they do not meet the requirements of open data attributes. Only a very small proportion of municipalities meet all minimum publication requirements. This indicates that the formal adoption of openness policies does not automatically translate into meaningful transparency. Instead, municipalities appear to comply selectively with legal obligations while avoiding the systematic disclosure of more operationally demanding datasets, such as inspection plans, petitions, environmental risks, detailed participatory information. Such a pattern presents a behavior in which public institutions meet the letter of regulation but not its democratic intent. In this sense, open data functions more as a compliance mechanism than as an instrument of smart governance and certainly note data-driven policy.

Furthermore, open data theory and smart governance approach (Vitálišová, et al., 2022, Vitálišová, et al., 2025; Gil-Garcia, Pardo, Nam, 2015; Meijer, Bolívar, 2016; Lindquist, 2022) assumes that access to information reduces information asymmetry between government and citizens; however, when cities publish only low-risk or legally mandatory information (e.g., contracts and invoices), transparency becomes largely symbolic. Rather than enabling co-creation of policy solutions, data publication primarily serves reputational and administrative purposes. Consequently, the research results challenge the assumption that openness alone increases civic engagement. Accessibility of data is a necessary but not sufficient condition for participation.

Another research issue was the personal capacities of cities devoted to the open data policy and IT support. The research results pointed to understaffing in this area. Minimum number of cities has the position of data curator in an organizational structure of the local authority; the limited attention is paid also to the IT department capacities. The employees responsible for the open data policy have cumulative functions, what allow them to dedicate only limited attention to this issue. This institutional weakness helps explain why many cities do not monitor who uses their data or which datasets are demanded. Without internal analytical capacity, open data cannot meaningfully support data-driven policymaking. In practice, cities often publish data but do not use it themselves for policy evaluation, forecasting, or strategic planning. Therefore, the actual decision-making processes in cities do not meet the idea of data-driven governance.

Furthermore, the study reveals that to the main users of open data belong citizens and entrepreneurs, on the other hand their interest is low. But the question is if the cities are able to evaluate their interest reliably, if they do not have the evidence and if the interest is not directly correlated with the quality of the published data and their experience with them. In case of the citizens, also the level of digital skills and the internet coverage need to be considered. The importance of these factors increases in rural areas. Therefore, the effectiveness of open data depends not only on supply (publication) but also on societal data literacy and institutional ecosystems capable of interpreting and communicating data.

By the primary research, the open data publishing is for cities perceive as a cost burden rather than a governance investment. It can be caused by the labor costs of specialized employees, higher costs for cyber security measures, or some specific software. But the problem can be

associated also with the fact that the local municipalities operating under budgetary constraints, see publishing open data as a service over statutory obligations, what is not their priority. This suggests that open data policies designed at national or supranational levels may underestimate administrative capacity at the local level. This is evident also in research findings, which confirm that the bigger cities more often published the open data.

The findings also raise questions about the relationship between open data and trust. The literature frequently presents transparency as a mechanism for strengthening trust in government, yet incomplete and outdated data, or the data which are not presented in comprehensible way to public may produce the opposite effect. If citizens encounter fragmented information or poorly structured datasets, they may interpret this not as openness but as administrative inefficiency. Therefore, transparency quality (not just data publishing) determines trust outcomes. The research implicitly demonstrates that open data initiatives without usability, standardization, and contextualization may fail to produce democratic benefits.

Finally, the research results show that open data in Slovak district cities remains predominantly at the "information disclosure" stage rather than progressing to the "data-driven governance" stage. There is also minimal evidence if the open data were used for initiating business activities or start up innovative activities. True data-driven policymaking would require integration of datasets into planning, performance evaluation, and participatory decision processes. However, the absence of monitoring mechanisms, analytical personnel, and strategic planning indicates that data is rarely used as evidence within policymaking cycles. In other words, municipalities publish data but do not yet govern through data.

Based on the research results we can conclude that the open data in Slovak district cities are more understood as technical activity, not transformation of the governance concept to smart, open and collaborative. To achieve it, the shift to integration of technical tools, organization structures and civic ecosystems is needed.

Conclusion

Open data is a key tool of governance of smart cities. But to transform it to reality, the institutional, personal and technical capacities are needed. The paper examined the extent to which open data functions as a practical instrument of smart governance in Slovak district cities what reveals a few significant barriers in their effective use in data-driven policymaking. Based on the research results *RQ1 How and to what extent do district towns in the Slovak Republic use open data as a smart governance tool?* can be answered as follows. Most Slovak district cities publish some information, but only a very small share meets the requirements of open data. Published information is often incomplete or in inadequate format. Consequently, openness in many cases represents regulatory compliance rather than a genuine transformation of governance practices.

To respond the *RQ2 What barriers prevent the effective use of open data in public policymaking?* the research showed that in Slovak cities institutional and organizational capacity constitutes a decisive factor in the development of open data policies. The absence of dedicated personnel, limited analytical expertise, and insufficient technical infrastructure prevent municipalities from integrating data into decision-making processes. Cities rarely evaluate use of open data, monitor user demand, or employ them for strategic planning. As a

result, open data contributes more to administrative transparency than to evidence-based governance. The persistence of financial constraints and the perception of open data as an administrative burden reinforce this pattern and explain why many local governments prioritize mandatory disclosure over proactive publication.

From a theoretical perspective, the research findings declare that effective data-driven policymaking requires not only publication of datasets but also organizational learning, interdepartmental coordination, and active engagement with citizens and stakeholders. Digital tools and open data platforms do not inherently produce participatory or accountable governance; rather, they operate within broader institutional, economic, and social contexts.

Future policy efforts in Slovak cities if they want to use the open data and open data platform as a tool of smart governance, should focus on standardization of datasets, improvement of usability and timeliness, development of analytical competencies within municipal administrations, and support for collaborative ecosystems involving academia, civic technology actors, and the private sector. Further research should examine the actual balance between supply and demand for open data, stakeholders' ability to use open data and, based on this, seek opportunities to optimize the system for publishing and working with open data leading to measurable improvements in public policy outcomes.

In conclusion, open data in Slovak cities currently represents an important but still underdeveloped component of smart governance. Its potential to enhance transparency, participation, and evidence-based decision-making will depend not primarily on technological expansion but on institutional capacity, political commitment, and the creation of a broader data culture within local governance systems.

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