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OPENNESS AS A DETERMINANT OF THE ECONOMIC EFFICIENCY OF LOCAL SELF-GOVERNMENT IN SLOVAKIA²

Abstract

The primary objective of this research is to identify and quantify the relationship between the openness of local self-governments and their financial health in the Slovak Republic. The study focuses on the largest cities, municipal districts, and the largest municipality in Slovakia during the period from 2010 to 2022. Through correlation analysis, it examines whether and to what extent openness, measured by eleven indicators, influences financial health, and is assessed using ten financial metrics. The methodology employed in this study integrates 11 indicators of openness and 10 financial metrics to systematically evaluate their correlation across 100 Slovak local self-governments during the period 2010–2022. The analysis confirms a strong positive correlation (0.71), with key findings highlighting that municipalities with higher openness tend to manage public resources more efficiently, particularly in areas like municipal enterprises, public participation, and access to information.

Key words: openness, economic efficiency, Slovakia, local self-government, correlation

INTRODUCTION

In today's globalized and interconnected world, the issue of openness and transparency in public administration is crucial for the effective functioning of democratic systems. In Slovakia, as in many other countries, the importance of evaluating the openness and financial health of local self-governments has been growing (Džuňová, Douša, Koreňová, 2024). These factors play a vital

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2 The contribution was based on the solution of the project VEGA 1/0312/22 – Openness as a determinant of the financial health of Slovak cities.

role in ensuring public trust, managing public resources efficiently (Butoracová Šindleryová, Turčan, 2023), personnel policies (Mura, Zsigmond, 2024) and supporting sustainable regional development (Kóňa, Horváth, Brix, 2022). Over the past two decades, significant attention has been paid to examining the financial aspects of local self-government in Slovakia. Research has primarily focused on efficiency and economic management in public finances, as well as on the impact of transparency and openness on the financial health of municipalities.

According to available information, a research project addressing the practical connection between openness and financial health has not yet been conducted in Slovakia. Both domestic and international literature provide theoretical frameworks and case studies focusing either on openness or on financial health (Padovani, 2023; Lee, Ham, Choi, 2016; Mitić, Andrejevic, 2018; Keco et al., 2019; Ashirbekova, Sansyzbaeva, 2024; Ismailova, Kalymbetova, 2023), but an integrated study linking these two areas remains absent. This makes the current research a pilot study that bridges two distinct fields of scientific inquiry.

In the Slovak context, studies examining the correlation between openness and the financial health of local self-governments are lacking. This gap presents an opportunity to explore the relationship between these two aspects in a sample of 100 local self-governing units. The findings of this research provide new insights into whether and how the openness of self-governments contributes to more efficient and sustainable management. Moreover, this study expands the current knowledge in public administration, particularly regarding the factors that can improve the financial health of Slovak local self-government.

Preliminary results from the research indicate the existence of a significant relationship between openness and the economic efficiency of Slovak local self-governments (Cívik, 2023; Cívik, Švikruha, 2023; Cívik, Mikuš, 2022; Cívik, Mikuš, 2021). These findings lay the groundwork for a comprehensive analysis of the entire sample of municipalities, suggesting a positive correlation between the studied variables.

1 METHODOLOGY AND RESEARCH PARAMETERS

The primary objective of this study is to analyze the correlation between the degree of openness and the economic efficiency of 100 selected local self-governments in Slovakia during the period 2010–2022. The research focuses on the largest cities, municipal districts, and the largest municipality in Slovakia, using correlation analysis to identify the relationship between openness in governance and financial health.

Table 1. Dimensions of Openness

Dimensions of Openness	Description
I. Access to Information	Evaluation of public access to information through various communication channels.
II. Public Participation in Decision-Making	Assessment of the degree of public involvement in local decision-making processes.
III. Public Procurement and Service Provision	Level of transparency in public tenders and procurement processes.
IV. Sale and Lease of Property	Disclosure and transparency in property management.
V. Budget and Contracts	Evaluation of public access to information on budgets and contracts with third parties.
VI. Subsidies and Grants	Assessment of transparency in the allocation of subsidies and grants.
VII. Housing and Social Facilities	Transparency in the management of housing stock and social service facilities.
VIII. Personnel Policy	Evaluation of transparency in personnel matters, including recruitment processes.
IX. Ethics and Conflict of Interest	Assessment of measures to prevent conflicts of interest and adherence to ethical standards.
X. Urban Planning and Building Authority	Monitoring transparency in urban planning and building authority processes.
XI. Municipal Enterprises and Investments	Evaluation of the management of municipal enterprises and local investments.

Source: Own processing based on Transparency International Slovakia, 2024.

Openness was operationalized through eleven indicators, while financial health was evaluated based on ten economic and financial metrics. This research integrates the dimensions of openness and financial health, requiring precise definition and quantification of openness levels across local self-government.

The process involved using eleven key indicators representing various aspects of openness, such as transparency, citizen participation in decision-making, and the quality of public administration.

Maximum scores for individual areas of openness were weighted based on their importance, with the total possible score set at 100. To enhance methodological consistency and accuracy, the original scoring methodology of Transparency International Slovakia was adapted into a percentage scale, representing the proportion of points achieved relative to the maximum possible score. This adjustment allowed for greater standardization of results, creating a robust foundation for comparison with financial metrics.

The relative assessment of openness provides a quantitatively precise representation of the transparency levels of local self-governments, contributing to a deeper understanding of their governance processes and economic performance.

The economic efficiency of local self-governments was analyzed based on ten comprehensive financial and economic indicators that reflect diverse aspects of fiscal stability and efficiency in municipal management. This multidimensional approach provided a representative and precise picture of the financial condition of individual municipalities.

The original scoring system, developed by INEKO and ranging from 0 to 6 points, was transformed into a percentage format to ensure methodological consistency and standardization. This percentage representation reflects the relative share of the achieved score compared to the maximum possible score, enabling a standardized comparison of economic efficiency levels among municipalities. This transformation offers an exact foundation for evaluating and comparing municipalities in terms of their economic efficiency and the effectiveness of their public financial management, highlighting their relative strengths and weaknesses at the local level.

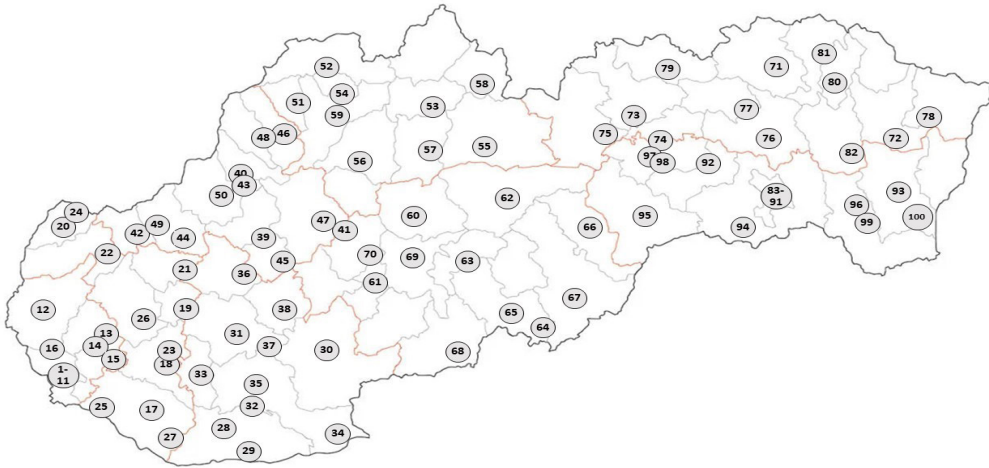
Table 2 Dimensions of Economic Efficiency

Dimensions of Economic Efficiency	Description
I. Total Debt	Represents total indebtedness relative to income.
II. Debt Service	Assesses the share of debt repayments in total current income.
III. Current Account Balance	Difference between current income and expenses.
IV. Overdue Liabilities	The ratio of overdue liabilities to current income.
V. Liabilities Outstanding for 60+ Days	Long-term liabilities and their impact on financial stability.
VI. Basic Balance	Reflects the net position of a municipality in managing current and capital accounts.
VII. Investment Intensity	The ratio of investment expenditures to total income.
VIII. Net Assets	Evaluates the value of assets per capita.
IX. Immediate Liquidity	Ability to quickly cover short-term liabilities.
X. Prompt Liquidity	The ratio of short-term assets to short-term liabilities.

Source: Own processing based on INEKO, 2024.

The input data for this research were sourced from publicly available datasets and databases provided by Transparency International Slovakia (<https://samosprava.transparency.sk/>) and INEKO (<https://www.hospodarenieobci.sk/>). Missing data were supplemented with information directly obtained from specific local self-governments and the Statistical Office of the Slovak Republic. In total, the primary analysis included over 12,000 data points (21 indicators × 6 years × 100 administrative units).

Figure 1. Geographical Distribution of the Research Sample



Legend: 1. Bratislava, 2. Bratislava - Devínska Nová Ves, 3. Bratislava - Dúbravka, 4. Bratislava - Karlova Ves, 5. Bratislava - Nové Mesto, 6. Bratislava - Petržalka, 7. Bratislava - Podunajské Biskupice, 8. Bratislava - Rača, 9. Bratislava - Ružinov, 10. Bratislava - Staré Mesto, 11. Bratislava - Vrakuňa, 12. Malacky, 13. Modra, 14. Pezinok, 15. Senec, 16. Stupava, 17. Dunajská Streda, 18. Galanta, 19. Hlohovec, 20. Holíč, 21. Piešťany, 22. Senica, 23. Sered', 24. Skalica, 25. Šamorín, 26. Trnava, 27. Veľký Meder, 28. Kolárovo, 29. Komárno, 30. Levice, 31. Nitra, 32. Nové Zámky, 33. Šaľa, 34. Štúrovo, 35. Šurany, 36. Topoľčany, 37. Vrábľa, 38. Zlaté Moravce, 39. Bánovce nad Bebravou, 40. Dubnica nad Váhom, 41. Handlová, 42. Myjava, 43. Nová Dubnica, 44. Nové Mesto nad Váhom, 45. Partizánske, 46. Považská Bystrica, 47. Prievidza, 48. Púchov, 49. Stará Turá, 50. Trenčín, 51. Bytča, 52. Čadca, 53. Dolný Kubín, 54. Kysucké Nové Mesto, 55. Liptovský Mikuláš, 56. Martin, 57. Ružomberok, 58. Tvrdošín, 59. Žilina, 60. Banská Bystrica, 61. Banská Štiavnica, 62. Brezno, 63. Detva, 64. Filákov, 65. Lučenec, 66. Revúca, 67. Rimavská Sobota, 68. Veľký Krtíš, 69. Zvolen, 70. Žiar nad Hronom, 71. Bardejov, 72. Humenné, 73. Kežmarok, 74. Levoča, 75. Poprad, 76. Prešov, 77. Sabinov, 78. Snina, 79. Stará Ľubovňa, 80. Stropkov, 81. Svidník, 82. Vranov nad Topľou, 83. Košice, 84. Košice - Dargovských hrdinov, 85. Košice - Juh, 86. Košice - Nad jazerom, 87. Košice - Sever, 88. Košice - Sídliisko KVP, 89. Košice - Sídliisko Ťahanovce, 90. Košice - Staré Mesto, 91. Košice - Západ, 92. Krompachy, 93. Michalovce, 94. Moldava nad Bodvou, 95. Rožňava, 96. Sečovce, 97. Smižany, 98. Spišská Nová Ves, 99. Trebišov, 100. Veľké Kapušany

Source: Own processing.

Based on the primary analysis of input data, secondary (average) values were calculated for each local self-government unit for the respective years. These values allowed the identification of aggregate average data for the entire research sample. The main objective of the study was achieved by determining the aggregate correlation coefficient. For a more detailed quantification of the relationships between subcategories of openness and economic efficiency, disaggregated correlation coefficients were also presented for specific areas of openness in the context of aggregate economic efficiency.

The research sample consisted of 100 local administrative units in Slovakia, including 79 cities, 18 municipal districts, two magistrates, and the largest municipality in Slovakia (Smižany). This cross-sectional sample was targeted at the most significant population centers in Slovakia, representing various population size categories and covering the entire geographical territory of the Slovak Republic. To ensure high representativeness, the analysis focused on administrative units from all self-governing regions, evenly distributed across Slovakia.

2 RESULTS AND DISCUSSION

The primary objective of this study is to determine the level of correlation between openness and economic efficiency in 100 selected local self-governments in Slovakia during the years 2010–2022. The research focuses on the largest cities, municipal districts, and the largest municipality in Slovakia. Using correlation analysis, the study explores whether and to what extent openness, measured by eleven indicators, influences financial health, assessed by ten financial and economic metrics.

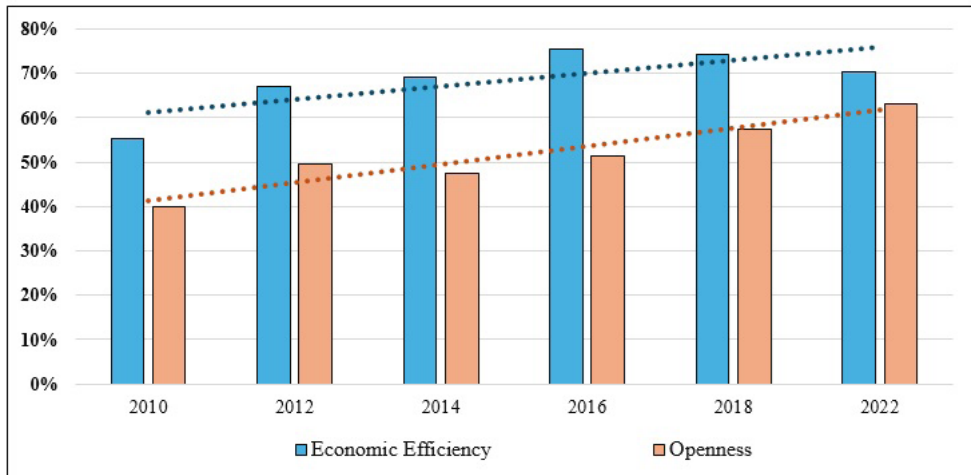
Aggregate results indicate significant insights. The temporal development of average levels of openness and economic efficiency is illustrated in the following graph.

The data reveal differing dynamics between openness and economic efficiency in Slovak local self-governments from 2010 to 2022. Economic efficiency, reflecting financial stability and operational effectiveness, started at 55.34% in 2010 and grew significantly to a peak of 75.46% by 2016. This improvement suggests gradual enhancements in financial governance, likely supported by reforms and more effective public financial management. However, after 2016, economic efficiency slightly declined, reaching 70.29% in 2022, which, while still over 15% higher than in 2010, may signal emerging economic challenges within the sample.

Openness, representing transparency and citizen participation, demonstrated a stable and continuous increase over the entire period. From a baseline of 39.91% in 2010, it rose to 63.18% in 2022. The most significant year-

over-year jump occurred between 2010 and 2012, with openness increasing by 9.55%, marking the largest annual change during the observed period.

Graph 1. Temporal Development of Average Openness and Economic Efficiency



Source: Own calculation.

At the beginning of the observed period, there was a significant disparity between the two variables: in 2010, economic efficiency was 15.43% higher than openness. Over time, this gap narrowed, and by 2022, the disparity decreased to 7.11%, reflecting a harmonization of economic efficiency and open governance principles. The most recent data demonstrate a long-term increase in openness alongside stagnation or a slight decline in economic efficiency since 2016.

Overall, both indicators showed positive developments relative to their baseline values, gradually converging and reducing disparities between economic efficiency and openness.

The final correlation coefficient of 0.71 indicates a strong positive linear relationship between the two variables (economic efficiency and openness) among the Slovak local self-governments studied. This suggests that higher levels of openness are associated with higher levels of economic efficiency. However, it is crucial to note that the correlation coefficient does not imply causation but rather points to a significant shared trend between the variables.

In the context of the data, this means that more open local self-governments tend to achieve better results in the efficient and purposeful use of public resources. This relationship may be influenced by various factors, such as legislative requirements for openness, the publication of contracts, public participation in decision-making processes, or control mechanisms facilitated by openness.

Table 3. Average Annual Levels of Openness and Economic Efficiency

Year	Economic Efficiency	Openness
2010	55,34%	39,91%
2012	67,03%	49,46%
2014	69,05%	47,39%
2016	75,46%	51,50%
2018	74,40%	57,34%
2022	70,29%	63,18%
Average	68,59%	51,46%
Correlation Coefficient	0,71	

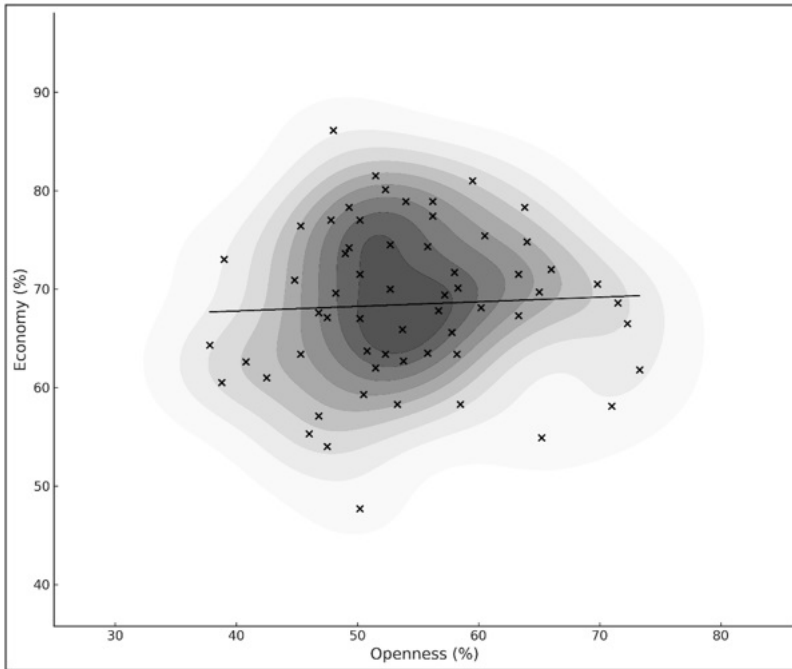
Source: Own calculation.

The correlation coefficient of 0.71 falls into the category of strong positive correlation, indicating a significant and systematic relationship between economic efficiency and openness. In statistical terms, values close to 1 are considered strong, and a coefficient of 0.71 is sufficiently high to signify a meaningful connection between these variables. This result demonstrates that changes in one variable are consistently associated with changes in the other to a considerable extent. While the correlation does not establish causation, its strength suggests that economic efficiency and openness are highly interlinked. In the social sciences, where extremely high correlations are rare, a coefficient of 0.71 is an exceptionally strong indicator of the relationship between these two key aspects of local governance.

The strong positive correlation supports the hypothesis that open processes reduce the risk of corruption, improve citizen trust, and facilitate more efficient management of public finances. Furthermore, efficient resource management may create opportunities to enhance openness through investments in modern technologies for information disclosure and public participation. However, further research is needed to determine whether this is a direct causal relationship or if both variables are influenced by other common factors, such as governance quality or political participation in specific municipalities. The correlation coefficient of 0.71 thus provides valuable insights into the relationship between openness and economic efficiency, emphasizing the need for a comprehensive approach to improving both areas.

The following graph visualizes the distribution density of the average values of openness and economic efficiency among Slovak local self-government. Darker areas indicate higher concentrations of values. Most data points fall within openness ranges of 45% to 65% and economic efficiency ranges of 60% to 75%, reflecting relatively homogeneous behavior among municipalities with some variability in openness.

Graph 2. Distribution Density of Average Data in the Research Sample



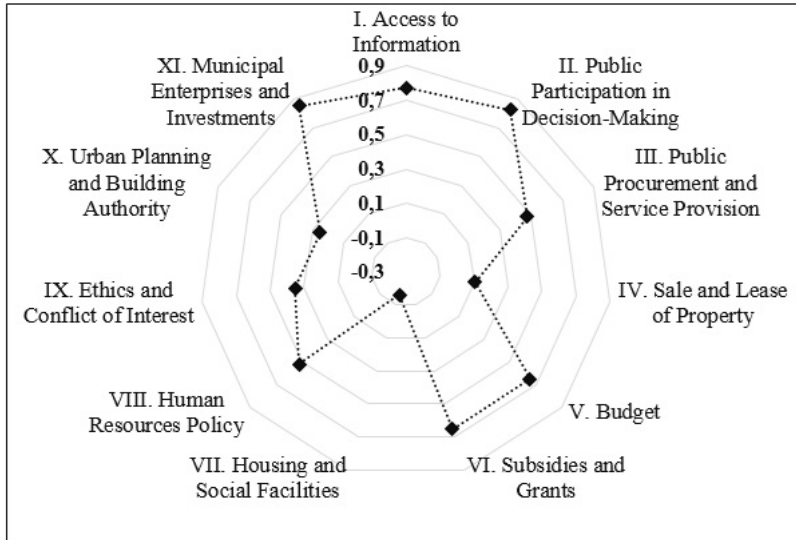
Source: Own calculation.

The line in the center of the graph represents the regression line, modeling the linear relationship between openness and economic efficiency. The slope of this line confirms the positive association between these variables, where increasing levels of openness correlate with rising economic efficiency. This relationship aligns with the calculated correlation coefficient of 0.71, indicating a strong positive linear correlation. The regression line illustrates the average trend between the variables, suggesting that more open municipalities tend to manage public resources more efficiently.

From a scientific perspective, the graph supports the hypothesis that openness, as one of the key indicators of good governance, can be an important factor in enhancing the economic efficiency of local self-government. The dispersion of data points around the regression line suggests that while some municipalities deviate from this trend, the overall results reinforce the strong connection between the studied variables. Such findings are highly relevant for discussions on policies aimed at increasing openness and its impact on the efficiency of public administration.

The breakdown of aggregate correlation values by openness subcategories yields significant insights. Correlation coefficients between individual subcategories of openness and overall economic efficiency provide a detailed view of the relationship within these domains.

Graph 3. Primary Correlation Coefficients of Openness and Economic Efficiency



Source: Own calculation.

The highest correlation was found in Area XI: Municipal Enterprises and Investments, with a coefficient of 0.851, indicating a very strong positive relationship. This suggests that openness in managing municipal enterprises and investments significantly influences economic efficiency, likely due to more effective management reducing resource waste.

The second strongest area was Area II: Public Participation in Decision-Making, with a correlation of 0.821, also reflecting a very strong positive relationship. This indicates that active citizen involvement in decision-making processes likely fosters more responsible and efficient use of public resources.

Area I: Access to Information followed with a correlation of 0.773, showing a strong and above-average positive relationship. Access to information serves as a fundamental tool for openness, enabling public oversight, reducing the risk of inefficient decisions, and enhancing the accountability of local representatives.

Other areas, such as Area V: Budget (0.651) and Area VI: Subsidies and Grants (0.653), demonstrated moderately strong positive correlations. These results indicate that openness in these areas significantly contributes to economic efficiency by enabling better planning and oversight of resource allocation.

Subcategories with below-average but still positive correlations included Area VIII: Personnel Policy (0.523), Area IX: Ethics and Conflict of Interest (0.351), and Area X: Urban Planning and Building Authority (0.250). While the openness in these areas shows a weaker relationship with economic efficiency, it still provides some benefits, likely linked to specific processes indirectly influencing resource management.

Conversely, Area IV: Sale and Lease of Property exhibited a very weak positive correlation (0.106), suggesting minimal impact on economic efficiency. The lowest correlation, and even a negative relationship, was observed in Area VII: Housing and Social Facilities, with a coefficient of -0.162. This may be interpreted as an area influenced more by social and political factors than by economic efficiency.

These partial results highlight that not all aspects of openness have the same impact on economic efficiency. Key areas to strengthen for improving resource use efficiency include municipal enterprises, public participation, and access to information. On the other hand, areas like housing and social facilities or the sale of property require a more nuanced approach to better understand their relationship with economic efficiency.

CONCLUSION

The uniqueness of this research lies in its integration of two often separately studied areas—openness and economic efficiency, analyzed through a sample of 100 local self-governments in Slovakia. Such an analysis has not been conducted in detail before, offering a novel perspective on improving municipal management through increased openness.

The study confirmed a strong positive correlation (correlation coefficient of 0.71) between the openness of local self-governments and their economic efficiency. More open municipalities utilize public resources more economically, with key areas being the management of municipal enterprises and investments, public participation in decision-making, and access to information. These dimensions help reduce resource wastage and enhance the quality of public governance.

One limitation of the research is the inability of correlation analysis to determine causal relationships. Future studies should explore causality and examine specific dimensions of openness in greater detail to assess their unique impacts on economic efficiency. Expanding the research to include smaller municipalities and comparisons with international local governments could provide further valuable insights.

These findings provide a significant foundation for developing policies that promote openness as a tool for improving economic efficiency and strengthening public trust in governance. The results highlight the need for further research to identify the most effective strategies to enhance both openness and economic efficiency in municipal management

REFERENCES

1. ASHIRBEKOVA, L. Z., SANSYZBAEVA, H. N. 2024. Transparency and Openness in the Functioning of Local Self-Government Authorities in Kazakhstan. In: Вестник НАН РК. Роç. 407, ç. 1, s. 380-389. ISSN 2518-1467.
2. BUTORACOVÁ ŠINDLERYOVÁ, I., TURČAN, K. 2023. The role of education in the human resource innovation in the structure of crisis management of self-government . In: Sytuacje kryzysowe w perspektywie krajowej i globalnej: Wyzwania w obszarze pedagogiki i psychologii. HARABIN, Radosław, KUHCINIŃSKI, Artur, WILK-JAKUBOWSKI, Grzegorz, eds. 1. vyd. Kielce: Staropolska Akademia Nauk Stosowanych w Kielcach, s. 111-127. ISBN 978-83-63981-52-5.
3. CÍBIK, L. (2023). Rate of openness of public administration – a case study of Slovak cities. In QUAERE 2023, Hradec Králové: Magnanimitas, 226-233. ISBN 978-80-87952-38-2.
4. CÍBIK, L., MIKUŠ, D. (2021). Openness as a determinant of economy territorial self-government (A case study of district towns in the Trnava and Nitra region). In Teoretické a praktické aspekty verejných financi: 25. ročník mezinárodní odborné konference. Praha: Oeconomica Publishing House, 9. ISBN 978-80-245-2433-7.
5. CÍBIK, L., MIKUŠ, D. (2022). How does openness affect the public administration economy? (Case study of cities in the Trnava and Nitra regions). In QUAERE 2022. Hradec Králové: Magnanimitas, 140-148. ISBN 978-80-87952-36-8.
6. CÍBIK, L., ŠVIKRUHA, M. (2023). The impact of openness in public administration on the management of public finances – a case study of Slovak cities. In Proceedings of the 15th International Scientific Conference Public Economics and Administration 2023, Ostrava: Vysoká škola báňská – Technická univerzita Ostrava, 59-66. ISBN 978-80-248-4698-9.
7. DŽUŇOVÁ, J., DOUŠA, M., KOREŇOVÁ, D. 2024. The Role of Local Government in the Process of the Brownfield Regeneration - Case Study of Košice, Slovakia. In: Review of European and Comparative Law. Roç. 58, ç. 3, s. 241-259. ISSN 2545-384X.
8. INEKO. (2024). Hospodárenie obcí. [online]. [cit. 2024-10-15]. Dostupné z: <https://www.hospodarenieobci.sk/>.
9. ISMAILOVA, R., KALYMBETOVA, A. 2023. Analysis of Citizens' Participation in the Management of Independent Budget of Local Self-Government. In: ECONOMIC Series of the Bulletin of the L N Gumilyov ENU, (4), s. 186–195. ISSN 2789-4339.
10. KECO, R., MEHMETI, G., TOMORRI, I., KAPAJ, I. 2019. State Administration, Self-Government and Government Service. In: Education,

- Law, Business. Cartero Publishing House: Madrid, s. 67 - 72. ISBN 978-84-854922-0-5.
11. KÓŇA, A., HORVÁTH, P., BRIX, R. 2022. Slovakia on the Way to the SMART Future, the Last Opportunity for Municipalities [electronic]. In: *Administratívne a Management Public*. Roč. 38, s. 180-196. ISSN 1583-9583
 12. LEE, J. N., HAM, J., CHOI, B. 2016. Effect of government data openness on a knowledge-based economy. In: *Procedia Computer Science*. Roč. 91, s. 158-167. ISSN 1877-0509.
 13. MITIĆ, S., ANDREJEVIC, D. 2018. Openness of Local Government and Good Financial Management. In: *KNOWLEDGE - International Journal*. Roč. 28, č. 5, s. 1607-1612. ISSN: 2545-4439.
 14. MURA, L., ZSIGMOND, T. 2024. Impact of Emotional Intelligence on Knowledge Sharing among Employees Working at SMEs in the Tourism and Service Sector. In: *Innovation Strategies and Organizational Culture in Tourism: Concepts and Case Studies on Knowledge Sharing*. London: Taylor & Francis Group, s. 13-28. ISBN 978-1-032-63337-4.
 15. PADOVANI, E. 2023. Financial Health and Distress in Local Government. In: *Global Encyclopedia of Public Administration, Public Policy, and Governance*. Cham: Springer International Publishing, s. 4803-4812. ISBN 978-3-030-66252-3.
 16. TRANSPARENCY INTERNATIONAL SLOVENSKO. (2024). Otvorená samospráva. [online]. [cit. 2024-10-15]. Dostupné z: <https://samosprava.transparency.sk/>.