

András Bojtor – Gábor Bozsó

COMPARATIVE ANALYSIS OF EVIDENCE-BASED POLICIES IN THE ERA OF DIGITALISATION

András Bojtor, researcher, Social Research Program, University of Public Service, Office of Innovation and Technology, bojtor.andras@uni-nke.hu

Gábor Bozsó, researcher, Social Research Program, University of Public Service, Office of Innovation and Technology, bozso.gabor@uni-nke.hu

Digital transformation speeds up and strengthens an already growing demand for a well-functioning public administration with e-governmental services. The outbreak of the global Covid-19 pandemic edged such actions forward even more. Public administration with embedded institutions enables the formulation of a competitive environment. The implication of digital services can decrease the negative effects of an economic crisis. Evidence-based policy-making is a component of good governance next to transparency, sustainability, efficiency, integrity and an approach of being people-centric. Digitalisation brings new challenges for public service and governments are taking various measures in response to them. There is an evolving need for citizen-centric electronic public administration services. National performance can be expansively analysed in a globalised world – with international comparisons. The paper conducts an international comparative analysis about the developments of citizen-centric digital transformation in public administration after 2014 with special focus on Hungary and selected reference countries.

KEYWORDS:

citizen centricity, DESI, digital transformation, e-government, EGDI, evaluation, indicator ranking

1. INTRODUCTION

As a consequence of the outbreak of the global Covid-19 pandemic (stated by the WHO on 11 March 2020), severe lockdowns and restrictions were imposed by governments all over the world at high economic and societal costs.¹ In this environment, greater attention is being given to digital solutions and services. Digital solutions can mitigate the harmful economic effects of government interventions to control the pandemic and provide positive effects to public health interests.² Digital forms of collaboration have increased rapidly as a consequence of the changed environment,³ making it necessary for public administrations to adopt and at the same time define the technological circumstances by introducing laws and providing the necessary infrastructure (5G availability). The usage of digital public services increased significantly in 2020.⁴ Digital transformation accelerated in the health sector⁵ (for example, using video visits, mobile phone applications), in pandemic prevention and crisis management,⁶ also in education where children, teachers and parents⁷ were all challenged by digital education. E-government services, in a broader definition, include any form of information and communication technologies used in public administration,⁸ providing connection among citizens, businesses and state agencies and also among state agencies themselves. These services can improve transparency, decrease the level of corruption, positively affect economic growth and increase convenience.⁹ Cost saving is based on two pillars: citizens and businesses save time and effort to handle their issues personally in one-stop-shops of public administration, and on the other side, less one-stop-shops need to be maintained because of the smaller number of personally handled cases. There is no need to digitalise paper-based documents and better data collection are available to the central body of public administration, on which evidence-based policy

¹ Thomas Pueyo, 'Coronavirus: The Hammer and the Dance', 19 March 2020.

² Varun Grover and Rajiv Sabherwal, 'Making sense of the confusing mix of digitalization, pandemics and economics', *International Journal of Information Management* 55 (2020).

³ Mitsuru Kodoma, 'Digitally transforming work styles in an era of infectious disease', *International Journal of Information Management* 55 (2020).

⁴ Panteleimon Karamalis and Athanasios Vasilopoulos, 'The digital transformation in public sector as a response to COVID-19 pandemic: The case of Greece', *XIV Balkan Conference on Operational Research*, BALCOR 2020.

⁵ Davide Golinelli, Erik Boetto, Gherardo Carullo, Maria Paola Landini and Maria Pia Fantini, 'How the COVID-19 pandemic is favoring the adoption of digital technologies in healthcare: a rapid literature review', *medRxiv*, 18 May 2020.

⁶ Bernd W Wirtz, Wilhelm M Müller and Jan C Weyerer, 'Digital Pandemic Response Systems: A Strategic Management Framework Against Covid-19', *International Journal of Public Administration*, 21 December 2020.

⁷ Netta Iivari, Sumita Sharma and Leena Ventä-Olkkonen, 'Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care?', *International Journal of Information Management* 55 (2020).

⁸ M Jae Moon, 'The evolution of E-government among Municipalities: Rhetoric or Reality?' *Public Administration Review* 62, no 4 (2002), 424–433.

⁹ Attah Ullah, Chen Pinglu, Saif Ullah, Hafiz Syed Mohsin Abbas and Saba Khan, 'The Role of E-Governance in Combating COVID-19 and Promoting Sustainable Development: A Comparative Study of China and Pakistan', *Chinese Political Science Review* 6 (2020).

decisions can be issued. The connections among government agencies are also more precise and quicker; government effectiveness improves. State capacity matters in the fight against the Covid-19 pandemic and increased government effectiveness is significantly associated with lower death rates.¹⁰

Based on the results of the Electronic Public Administration Operational Program and the State Reform Operational Program 2007–2013, analysed by Aranyosy et al.,¹¹ the Hungarian Government has handled the digital transformation of public administration as a priority since 2014. This article analyses the changes in Hungarian e-governance and digital public services through selected international indicators between 2014–2020 and reveals the relevant background processes. The analysis addresses not only performance in terms of absolute values, but also assesses the relative position to carefully chosen benchmark countries. The selected indicators put a special focus on the citizen-centric e-services of public administration.

2. E-GOVERNMENTAL DEVELOPMENTS IN HUNGARY

The Hungarian Government introduced structural reforms in the Hungarian public administration in the last decade. The European Union's Excessive Debt Deficit Procedure against Hungary (levied in 2013) and bailout program of the International Monetary Fund and the European Commission (repaid in 2016) provided strong conditionality to the Hungarian Government. The results of the introduced changes were opposite of the common practice of the European Union.¹² Despite global decentralisation trends, Hungary centralised its public administration, formulated on a strong and capable state concept.¹³ Territorial administration was completely restructured, the complete reform of local governments was introduced and the University of Public Service was established as a main body to provide human resource management of public administration with well-trained and capable human resources, which was also positively evaluated by the OECD.¹⁴ Essential elements of the public administration reform programmes¹⁵ are being implemented by developmental projects financed by the Public Administration and Civil

¹⁰ Balzhan Serikbayeva, Kanat Abdulla and Yessengali Oskenbayev, 'State Capacity in Responding to COVID-19', *International Journal of Public Administration*, 07 December 2020.

¹¹ Márta Aranyosy, András Nemeslaki and Adrienn Fekó, 'Empirical Analysis of Public ICT Development Project Objectives in Hungary', *International Journal of Advanced Computer Science and Applications* 5, no 12 (2014).

¹² Zoltán Török, 'Unintended outcomes effects of the European Union and the International Monetary Fund on Hungary's public sector and administrative reforms', *Public Policy and Administration* 35, no 2 (2020), 158–178.

¹³ István Balázs, *A közigazgatás változásairól Magyarországon és Európában a rendszerváltástól napjainkig* (Debrecen: Debreceni Egyetemi Kiadó, 2016).

¹⁴ OECD, 'Hungary: Public Administration and Public Service Development Strategy, 2014–2020', 13 December 2017.

¹⁵ Közigazgatási és Igazságügyi Minisztérium, Magyary Zoltán közigazgatás-fejlesztési program (MP 12.0), 2012; Közigazgatási és Igazságügyi Minisztérium, Magyary Zoltán közigazgatás-fejlesztési program (MP 11.0), 2011.

Service Development Operative Programme (PACSDOP) between 2013–2020. More than 935 million euros are planned to be spent on the development of the Hungarian public administration, which plays an important role in the process of improving the performance and efficiency of the Hungarian state with its indirect effects on the competitiveness of the business sector. The outcomes and impacts should be measurable and detectable in international comparisons, as well. A well-functioning evaluation can distinguish the changes caused directly by the intervention or just as side-effects of unintended circumstances. There is a consensus on the need to draw distinction between outcomes and impacts, however, their exact definitions are still subject to academic disputes.¹⁶ While short- and medium-term results are defined as outcomes, impacts are long-term results of an implemented measure.¹⁷ In the 2014–2020 programming period, the EU Cohesion Policy Fund invested in institutional capacity building and reforms under Thematic Objective (TO) 11: ‘Enhancing institutional capacity of public authorities and stakeholders and efficient public administration.’ Relevant developments and interventions of the Hungarian development policy are summarised and coordinated in the Public Administration and Civil Service Development Operative Program,¹⁸ based on Hungary’s Public Administration and Public Service Development Strategy (PADPSDS) 2014–2020.¹⁹ The National Digitalization Strategy 2021–2030²⁰ was introduced in 2020 as a successor of PADPSDS, also building on the initiatives of the Digital Success Programme (DSP 2.0 – Strategic study,²¹ Hungary’s Artificial Intelligence Strategy 2020–2030,²² PCDS – Public Collection Digitalization Strategy,²³ DSS – Digital Startup Strategy of Hungary,²⁴ DES – Digital Education Strategy of Hungary,²⁵ DEES – The Digital Export Development Strategy of Hungary²⁶). The main aim is to make public entities deliver public services in a professional, cost-effective and customer-oriented manner. In the 2014–2020 EU budget period, the key feature of good governance, in addition to cooperation and policy polarisation, is results-orientation²⁷ to ensure more efficient use of budgetary resources.

¹⁶ Brian Belcher and Markus Palenberg, ‘Outcomes and Impacts of Development Interventions: Toward Conceptual Clarity’, *American Journal of Evaluation* 39, no 4 (2018), 478–495.

¹⁷ *OECD Glossary of Key Terms in Evaluation and Results Based Management* (Paris: OECD Publications, 2002).

¹⁸ Miniszterelnökség, ‘Public Administration and Civil Service Development Operative Program’, 2015.

¹⁹ Miniszterelnökség, ‘Közigazgatás- és Köszolgáltatás-fejlesztési Stratégia 2014–2020’, 2015.

²⁰ Innovációs és Technológiai Minisztérium, Belügyminisztérium, ‘Nemzeti Digitalizációs Stratégia 2021–2030, Partnerségi konzultációra bocsátott, nem végleges változat’, 2020.

²¹ Digitális Jólét Program, ‘A digitális jólét program 2.0’, 2017.

²² Artificial Intelligence Coalition, Digital Success Programme, Ministry for Innovation and Technology, ‘Hungary’s Artificial Intelligence Strategy 2020–2030’, 2020.

²³ Digitális Jólét Program, ‘Közgyűjteményi Digitalizálási Stratégia (2017–2025)’, 2017.

²⁴ Digitális Jólét Program, ‘Magyarország Digitális Startup Stratégiája’, 2016.

²⁵ Digitális Jólét Program, ‘Magyarország Digitális Oktatási Stratégiája’, 2016.

²⁶ Digitális Jólét Program, ‘Magyarország Digitális Exportfejlesztési Stratégiája’, 2016.

²⁷ Philip McCann, *The Regional and Urban Policy of the European Union: Cohesion, Results-Oriented and Smart Specialisation* (Edward Elgar Publishing, 2015).

The Digital Market Strategy²⁸ emphasises the support of inclusive e-society in the member states of the European Union; the published Action Plan²⁹ lists the concrete actions to improve online public services. Based on the Tallin Declaration,³⁰ which emphasises the user-centric principle in digital public services, the Berlin Declaration³¹ in December 2020, reinforces the EU digital government policy contributing to core European values and fundamental rights. The digital transformation in public administration is triggered mainly by the external environment: technology rapidly changes and the expectations of citizens increases, and less commonly by internal pressures to realise the need of improving applied processes.³² The developments should take into consideration office processes and citizens' expectations with the constraint of technological possibilities.³³

3. INTERNATIONAL COMPARISONS

3.1. Methodological biases

Before applying indicators from international indicator systems, its limitation must be observed. International indicators do not take national characteristics into consideration. Financial investments alone cannot grant good national results in composite ranking systems which take into account infrastructural, social and regulator attitudes. At the same time, a satisfactory infrastructure does not mean that the population chooses to use the provided services online instead of traditional, personal service use.

An international comparative analysis can be mainly carried out based on data collected by international institutions, like the International Institute for Management Development, World Economic Forum (WEF) and the World Bank. Almost always there are certain values behind these data collections. Some cases include shortage of methodological transparency or defined reasoning of data.³⁴ In other cases, the international rankings 'simplify social phenomena, level unwarranted normative judgements, and selectively diagnose complex

²⁸ European Commission, A Digital Single Market Strategy for Europe, COM(2015) 192 final.

²⁹ European Commission, EU eGovernment Action Plan 2016–2020, COM(2016) 179 final.

³⁰ Council of the European Union, Tallin Declaration on eGovernment, 2017.

³¹ Council of the European Union, Berlin Declaration on Digital Society and Value-Based Digital Government, 2020.

³² Ines Mergel, Noell Edelmann and Nathalie Hauga, 'Defining digital transformation: Results from expert interviews', *Government Information Quarterly* 36, no 4 (2019).

³³ Péter Fehér, 'A digitális átalakulás módszereinek feltárása a közszolgáltatásokban', *Vezetéstudomány* 49, nos 8–9 (2018), 22–31.

³⁴ Erzsébet Németh, Tamás Bálint Vargha and Ágnes Katalin Pályi, 'Nemzetközi korrupciós rangsorok tudományos megbízhatósága', *Pénzügyi Szemle* 64, no 3 (2019), 321–337; Tamás Bálint Varga, Erzsébet Németh and Ágnes Katalin Pályi, 'Mit mutatnak a versenyképességi rangsorok?', *Pénzügyi Szemle* 64, no 3 (2019), 352–370.

problems'.³⁵ More than 93 different comparative governance indicators exist,³⁶ with a variety of countries involved in their data collections. The frequency of their publication (for example, annually, biannually, or more rarely) is divergent. Between two publications, the methodology behind the same indicator can change radically, which makes it difficult to draw historical conclusions or evaluate their values or rankings. A well-designed, definite ranking is applicable when not only the ranking is objective and disseminated, but also when its methodology is taken into consideration.³⁷ A ranking system can cause huge publicity and can draw attention to specific issues. It can also encourage quality debates; it can enable the possibility to explore the studying effect. On the other hand, it may also have several disadvantages: the debate can be just about the place in the ranking, and can cause the improvised re-discussion of the long-term strategies.³⁸

Besides rankings, international indicators can be used in performance evaluations providing comparisons among countries. In case of public administration, the capabilities and capacities of the applied systems show wide varieties. There is continuous pressure to introduce reforms on public administrations. E-government development and digitalisation is only a part of public administration reforms. The application of new methodologies like big data analysis (for example, at the examination of criminal activity during the Boston Marathon³⁹), and experimental research methods in policy-making processes also offer good results.

Achieving improved competitiveness by digitalisation is an important objective of the Hungarian operative program focusing on public administration development. The aggregated results or impacts of the implemented projects can hardly be detected in international rankings exclusively. However, their effectiveness and impact cannot be denied in the level of indicators. There are five worldwide or regional rankings (the Ease of Doing Business, the Digital Economy and Society Index (DESI), the eGovernment Benchmark, the Global Competitiveness Report and the United Nations E-Government Index) which provide indicators to characterise changes in the case of Hungarian public administration development.

³⁵ Alexander Cooley, 'How International Rankings Constitute and Limit Our Understanding of Global Governance Challenges: The Case of Corruption', in *The Palgrave Handbook of Indicators in Global Governance* ed. by Debora Valentina Malito, Gaby Umbach and Nehal Bhuta (Cham: Springer International Publishing, 2018), 62.

³⁶ Robert I Rotberg, *On Governance: What It Is, What It Means and Its Policy Uses* (McGill-Queen's University Press, 2016).

³⁷ Rudolf Giffinger, Gudrun Haindl and Hans Kramar, 'The role of rankings in growing city competition', *Urban Research and Practice* 3, no 3 (2010), 299–312.

³⁸ Matthias Schönert, 'Städteranking und Imagebildung', *BAW Institute für Wirtschaftsforschung, Monatsbericht* 2 (2003).

³⁹ Maureen A Pirog, 'Data will drive innovation in public policy and management research in the next decade', *Journal of Policy Analysis and Management* 33, no 2 (2014), 537–543.

Correlations among dimensions of the international indicator system can be often observed, for example, the Digital Public Services dimension of DESI shows strong relationship with the Integration dimension.⁴⁰

As the PACSDOP is currently in either the development or implementation phase, several project results, and likewise impacts, are yet to be delivered. Furthermore, international rankings and indexes collect the data from previous years, in our case 2018, 2019, before the Covid-19, which is an important limitation of the paper.

4. INDICATORS FOR CATCHING E-GOVERNMENTAL DEVELOPMENTS IN HUNGARY BETWEEN 2014–2020

Selecting benchmark countries makes it easier to perform comparisons among countries. Analysts have to take into consideration the qualifications and interests of the target audience (who are going to read the evaluations). As mentioned above, the projects of the Hungarian public administration development program financed from the Cohesion Funds of the European Union are under implementation. In this case we can talk about intermediate results or impacts. By historical comparison, there is also a need of setting out a base year, when the effects of the program are not perceptible. In our case this year is 2016. Financed projects stepped into implementation phase the following year. Data collection requires attention: using the report of *Doing Business 2017* means that the data are collected in 2016, *Global Competitiveness Report 2017* means that the data are collected in the first part of the same year, in 2017. As the PACSDOP is partially financed by the European Union, there is a need to emphasise the role of the EU; therefore, the EU28 average is involved in the performance analysis. We are talking about the place between the 28 member states of the European Union in case of rankings.

The eight countries selected for visualisation (keeping in mind relevance) are Estonia (as a country which generally performs well in digitalisation as a consequence of early introduced and well-designed digital reforms), the V4 countries (Slovakia, the Czech Republic, Poland and Hungary) plus Slovenia (as EU countries with similar history and culture) and finally Bulgaria and Romania (as countries that joined the EU together following the 2004 enlargement).

Developing e-government services is of little worth, if citizens and businesses are not committed to use them. Its EU-wide applied indicator is the e-government users, collected by Eurostat. It measures people, aged 16–74 years, who sent completed forms to public authorities over the internet in the previous 12 months. The number of Hungarian users significantly increased from the base year; however, it is still lagging behind most of the EU countries and the EU28 average. Several new services were introduced (for example, the

⁴⁰ Zoltán Bánhidi, Imre Dobos and András Nemeslaki, 'What the overall Digital Economy and Society Index reveals: A statistical analysis of the DESI EU28 dimensions', *Regional Statistics* 10, no 2 (2020), 42–62.

Hungarian Tax Authority introduced an electronic system of income tax return [eSZJA] in line with legislative changes to promote e-governmental services. Later on, a greater increase is expected as more development projects enter the implementation phase.

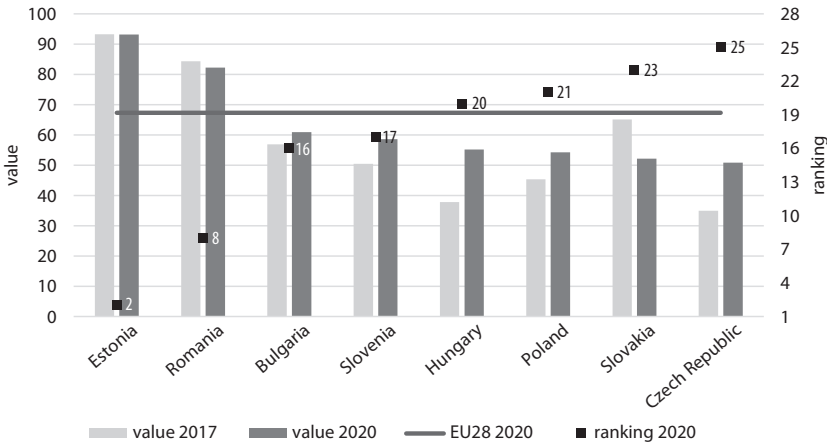


Figure 1 • The government users (Source: Compiled by the authors based on <https://digital-agenda-data.eu>)

Users can choose to use e-governmental service only if it is available and they can easily adopt them. It is measured by the user-centric indicator collected within the eGovernment Benchmark. User centricity improved in all the visualised countries, meaning that governments are committed to improve availability of services and are paying attention to user satisfactions. It can also be assumed that their feedback is more important and taken into consideration by the developers.

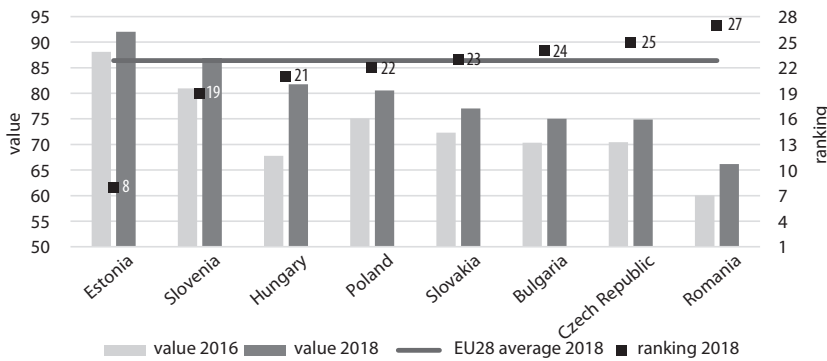


Figure 2 • User centricity values in the base year (2016) and in the latest available data (2018) (Source: Compiled by the authors based on <https://ec.europa.eu/digital-single-market/en/news/egovernment-benchmark-2019-trust-government-increasingly-important-people>)

As e-governmental services are developed to provide an easier and more cost-effective way of using public services, it is necessary to save the user's time. This can be reached if the identified user's data are filled automatically if it has previously been provided by the user. This is measured by a mystery shopping technique in various life events, for example, applying for unemployment aid. This indicator can increase, on the one hand, by the development of infrastructure and the interoperability between various data centres, and on the other hand by the satisfaction of citizens – meaning the improvement of user-experience. In case of Hungary, we can find adequate and significant improvement.

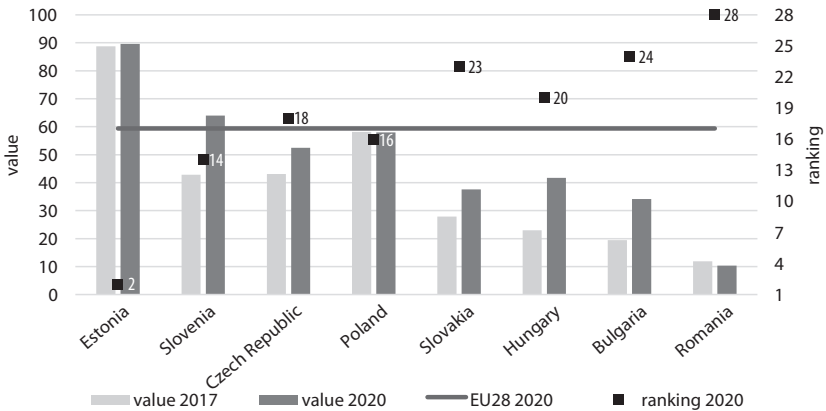


Figure 3 • Prefilled forms (Source: Compiled by the authors based on <https://digital-agenda-data.eu>)

Not only e-government development can be compared internationally, but also some relevant selected sectors. As an illustration, we have chosen the taxation indicator of the Doing Business ranking system. The Hungarian tax system is usually criticised because of its rates and complexity. Several reforms were introduced recently, the rate of taxation was decreased, the tax-system was simplified and the level of digitalisation, like automated income tax returns (partially financed by the EU funds), was improved. All the activities together improved the taxation indicator.

International surveys also provide useful data for making comparisons. The World Economic Forum annually performs the Executive Opinion Survey that provides soft data about competitiveness. Among others it asks: 'In your country, how burdensome is it for companies to comply with public administration's requirements (e.g., permits, regulations, reporting)?' which can be replied with a seven-numbered scale where 1 = extremely burdensome and 7 = not burdensome. The more than 16,000 answers can improve the credibility of the results.⁴¹

⁴¹ Klaus Schwab, *The Global Competitiveness Report 2019* (Cologne–Geneva: World Economic Forum, 2019).

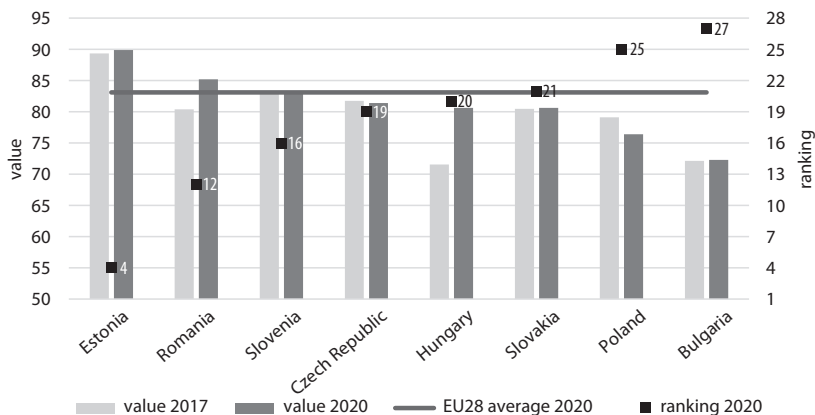


Figure 4 • The values in 2017 (as base year) and in 2020 (as midterm year) and the ranking of taxation in 2020 (Source: Compiled by the authors based on www.doingbusiness.com)

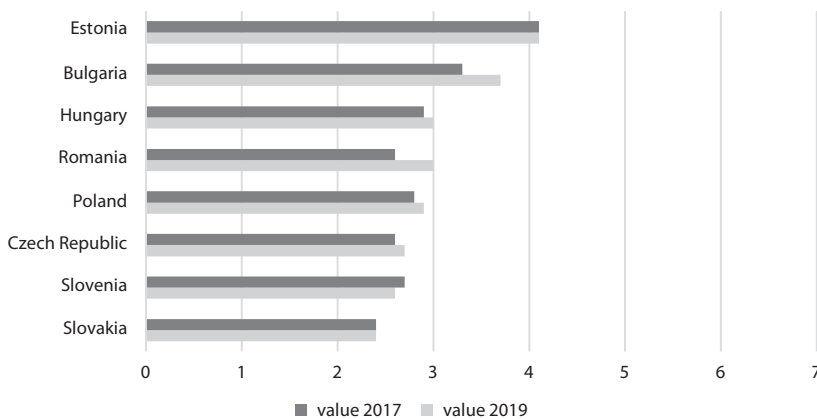


Figure 5 • The burden of government regulation (Source: Compiled by the authors based on Schwab, 2019.)

The digital public services for businesses indicator reveals the share of online available public services required for starting a business and for conducting regular business operations. Scoring is higher for fully online services provided through portal services which provide only information, but have to be completed offline. This DESI component is based on the mystery shopping data collection methodology of the eGovernment Benchmark report and includes 6 life events. Figure 6 shows that services provided for businesses are mostly developed (in many cases their use is obligatory), although the score of countries in the region is lower than the EU average. All countries show improvement since the base-year,

with Bulgaria's score reaching the EU28 average. Hungary's score increased significantly, ranking third in the region, almost reaching the EU 28 average.

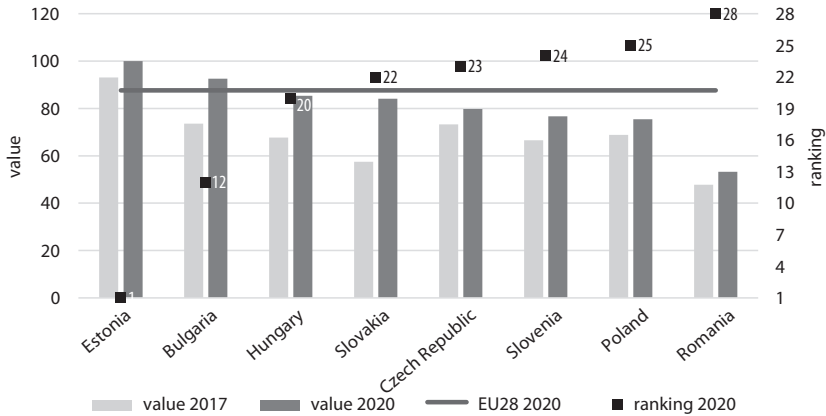


Figure 6 • Values of E-government Services for Business in 2017 and in 2020 (Source: Compiled by the authors based on <https://digital-agenda-data.eu/charts/desi-components>)

The Online Service Index (OSI) is one of the three equal weighted components of the United Nations E-Government Index (EGDI). The OSI is specifically measuring e-government services, while the other two components focus on telecommunication infrastructure and human capacity. Dataset is available since 2003 and it is calculated based on a normalised value in the range 0 to 1. The OSI is a composite indicator, it is based on data collected from an extensive online service questionnaire (QSQ) by volunteer researchers reviewing and assessing the availability and quality of key digital public services. The questions are grouped in three main areas on the availability of information about something, such as laws, policies, legislation or expenditures; on the existence of a feature such as contact information, e-government platform for procurement or open data; on ability to do something on the website, that is, run a transaction. OSI values are not to be considered absolute measurements; rather, they capture the online performance of countries relative to each other at a specific time. High score is an indication of current best practices rather than perfection. Thus, conclusions should be drawn accordingly. Figure 7 shows that online services are mostly developed and increased significantly in the past four years with the exception of Slovenia. Countries having high OSI already face difficulties in such global measurements to improve. All countries score around regional average only Estonia remains an outlier. Hungary's score increased; however, it is the only one among the 8 that experienced a drop of EGDI ranking from 45 in 2016 to 52 in 2020 due to its relative underperforming to benchmark countries in all three components of EGDI.

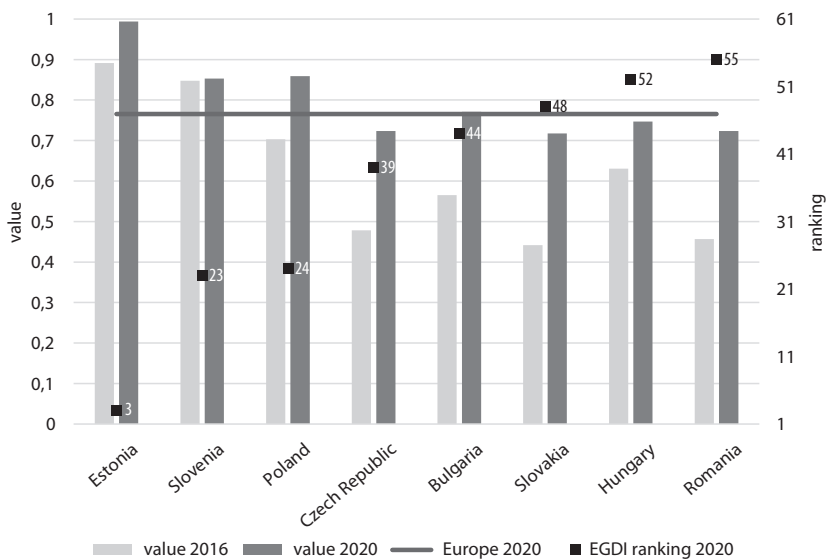


Figure 7 • Values of Online Service Index (OSI) of the United Nations E-Government Index in 2016 and in 2020 (Source: Compiled by the authors based on <https://publicadministration.un.org/egovkb/Data-Center>)

(Note: Europe 2020 means in this case the average of the EU28 countries, Iceland, Norway, Switzerland, Lichtenstein, the Russian Federation and Belarus; the EGD Ranking contains the 193 UN Member States.⁴²)

5. CONCLUSIONS

There is a continuous reform process in public administration with the support of and in parallel with the common politics of the European Union. Not only the development of the infrastructural background matters, but also the usability and willingness of the application of citizens and various actors in the business sector.

The selected international indicators evaluating the performance of the Hungarian public administration development program are various; some of them are based on hard data (for example, government users) while others on soft data (administrative burden). These constraints should be taken into consideration by evaluators. The example of taxation presented shows that the changes of an indicator can be caused by several factors, like changes in legislation, or technological development, and so on. The process of making evaluation is a balance of costs and benefits, which means that the more precision

⁴² United Nations, 'E-Government Survey 2020, Digital Government in the Decade of Action for Sustainable Development', 2020.

an evaluation required, the more resource is needed (more costly), and the value of the intervention should also be in line with that cost. One of the main future theoretical challenges is how evaluators and policy makers should overcome the present weakness of indicators. In order to develop better indicators, more primer data collections focusing on real user needs and development goals in digitalisation could provide information for more analysis and sharing good practices and drive digital innovations as well.

According to the selected indicators, the performance of the Hungarian public administration improved and most probably is going to improve in the future. There are several projects in the implementation phase of the PACSDOP waiting for results and outcomes to evolve. An indicator showing an increase does not necessarily mean that the country will gain places in the rankings. It shows only the direction and an increase relative to others, while other countries can improve their performance more rapidly and effectively.

Public administration reforms in the digital age coincide with substantial e-government development. Its impacts are possible to be monitored and assessed well with international indicators benchmarking progress with other countries with similar geographical, socioeconomic and historical backgrounds – which also is of utmost importance for regional and national competitiveness.

Relevant international indicators revealed by the research datasets show minor improvements in e-government services between the 2016 baseline year to the most recent data. In case of Hungary, all indicator values increased in the given period, however, not always accompanied by an increase in country ranking.

Both regional and Hungarian DESI scores, including digital public services dimension, have improved, recognising the growing importance of digital capacities and services not only in the private, but also in the public sector. With regard to e-government indicators in the field of national and global competitiveness, the conclusion is similar: results are better in absolute, but not in relative terms.

It is also important to keep in mind that not all the impacts of a project can be measured and other impacts can bring numbers down. A normative way of thinking can limit the borders of discovery and significant factors can lurk in the background.

The international comparison in 2021 can reveal whether the Hungarian public administration managed to catch up in e-governmental procedure or further developments are needed. According to the data, some improvement can be observed, but Hungary is still placed in the lower positions in the rankings. This sheds light on an important practical challenge that despite the significant investment spent on digitalisation of public services, the relative position of Hungary has not improved significantly. However, not only Hungary is investing in ICT, others maybe investing more or with better results, which could also be a lesson to learn.

REFERENCES

1. Aranyosy, Márta, András Nemeslaki and Adrienn Fekó, 'Empirical Analysis of Public ICT Development Project Objectives in Hungary'. *International Journal of Advanced Computer Science and Applications* 5, no 12 (2014). Online: <https://doi.org/10.14569/IJACSA.2014.051206>
2. Artificial Intelligence Coalition, Digital Success Programme, Ministry for Innovation and Technology, 'Hungary's Artificial Intelligence Strategy 2020–2030', 2020. Online: <https://digitalisjoletprogram.hu/hu/kiadvanyaink/download/Hungary's%20Artificial%20Intelligence%20Strategy.pdf/en>
3. Balázs, István, *A közigazgatás változásairól Magyarországon és Európában a rendszerváltástól napjainkig*. Debrecen: Debreceni Egyetemi Kiadó, 2016.
4. Bánhidi, Zoltán, Imre Dobos and András Nemeslaki, 'What the overall Digital Economy and Society Index reveals: A statistical analysis of the DESI EU28 dimensions'. *Regional Statistics* 10, no 2 (2020), 42–62. Online: <https://doi.org/10.15196/RS100209>
5. Belcher, Brian and Markus Palenberg, 'Outcomes and Impacts of Development Interventions: Toward Conceptual Clarity'. *American Journal of Evaluation* 39, no 4 (2018), 478–495. Online: <https://doi.org/10.1177/1098214018765698>
6. Cooley, Alexander, 'How International Rankings Constitute and Limit Our Understanding of Global Governance Challenges: The Case of Corruption', in *The Palgrave Handbook of Indicators in Global Governance*, ed. by Debora Valentina Malito, Gaby Umbach and Nehal Bhuta (Cham: Springer International Publishing, 2018), 49–67. Online: https://doi.org/10.1007/978-3-319-62707-6_3
7. Council of the European Union, 'Tallin Declaration on eGovernment', 2017. Online: http://ec.europa.eu/newsroom/document.cfm?doc_id=47559
8. Council of the European Union, 'Berlin Declaration on Digital Society and Value-Based Digital Government', 2020. Online: https://ec.europa.eu/isa2/sites/isa/files/cdr_20201207_eu2020_berlin_declaration_on_digital_society_and_value-based_digital_government_.pdf
9. Digitális Jólét Program, 'A digitális jólét program 2.0', 2017. Online: <https://digitalisjoletprogram.hu/files/58/f4/58f45e44c4ebd9e53f82f56d5f44c824.pdf>
10. Digitális Jólét Program, 'Közgyűjteményi Digitalizálási Stratégia (2017–2025)', 2017. Online: <https://digitalisjoletprogram.hu/files/27/c4/27c41541fb75cfb0bfd4ceb02385fb4e.pdf>
11. Digitális Jólét Program, 'Magyarország Digitális Startup Stratégiája', 2016. Online: <https://digitalisjoletprogram.hu/files/51/80/518082ba18acf5b5d4e582f2969d4501.pdf>
12. Digitális Jólét Program, 'Magyarország Digitális Oktatási Stratégiája', 2016. Online: <https://digitalisjoletprogram.hu/files/55/8c/558c2bb47626ccb966050debb69f600e.pdf>
13. Digitális Jólét Program, 'Magyarország Digitális Exportfejlesztési Stratégiája', 2016. Online: <https://digitalisjoletprogram.hu/files/a2/da/a2da4ddf80fe2c173c7a8d22d833e5cc.pdf>

14. European Commission, EU eGovernment Action Plan 2016–2020, COM(2016) 179 final. Online: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=15268
15. European Commission, A Digital Single Market Strategy for Europe, COM(2015) 192 final. Online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52015DC0192>
16. Fehér, Péter, 'A digitális átalakulás módszereinek feltárása a közszolgáltatásokban'. *Vezetéstudomány* 49, nos 8–9 (2018), 22–31. Online: <https://doi.org/10.14267/VEZTUD.2018.07-08.03>
17. Giffinger, Rudolf, Gudrun Haindl and Hans Kramar, 'The role of rankings in growing city competition'. *Urban Research and Practice* 3, no 3 (2010), 299–312. Online: <https://doi.org/10.1080/17535069.2010.524420>
18. Golinelli, Davide, Erik Boetto, Gherardo Carullo, Maria Paola Landini and Maria Pia Fantini, 'How the COVID-19 pandemic is favoring the adoption of digital technologies in healthcare: a rapid literature review'. *medRxiv*, 18 May 2020. Online: <https://doi.org/10.1101/2020.04.26.20080341>
19. Grover, Varun and Rajiv Sabherwal, 'Making sense of the confusing mix of digitalization, pandemics and economics'. *International Journal of Information Management* 55 (2020). Online: <https://doi.org/10.1016/j.ijinfomgt.2020.102234>
20. Innovációs és Technológiai Minisztérium, Belügyminisztérium, 'Nemzeti Digitalizációs Stratégia 2021–2030, Partnerségi konzultációra bocsátott, nem végleges változat', 2020.
21. Iivari, Netta, Sumita Sharma and Leena Ventä-Olkkonen, 'Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care?' *International Journal of Information Management* 55 (2020). Online: <https://doi.org/10.1016/j.ijinfomgt.2020.102183>
22. Karamalis, Panteleimon and Athanasios Vasilopoulos, 'The digital transformation in public sector as a response to COVID-19 pandemic: The case of Greece'. *XIV Balkan Conference on Operational Research*, BALCOR 2020.
23. Klaus Schwab, *The Global Competitiveness Report 2019*. Cologny–Geneva: World Economic Forum, 2019.
24. Kodoma, Mitsuru, 'Digitally transforming work styles in an era of infectious disease'. *International Journal of Information Management* 55 (2020). Online: <https://doi.org/10.1016/j.ijinfomgt.2020.102172>
25. Közigazgatási és Igazságügyi Minisztérium, Magyary Zoltán közigazgatás-fejlesztési program (MP 12.0), 2012.
26. Közigazgatási és Igazságügyi Minisztérium, Magyary Zoltán közigazgatás-fejlesztési program (MP 11.0), 2011.
27. McCann, Philip, *The Regional and Urban Policy of the European Union: Cohesion, Results-Oriented and Smart Specialisation*. Edward Elgar Publishing, 2015.

28. Mergel, Ines, Noell Edelmann and Nathalie Hauga, 'Defining digital transformation: Results from expert interviews'. *Government Information Quarterly* 36, no 4 (2019). Online: <https://doi.org/10.1016/j.giq.2019.06.002>
29. Miniszterelnökség, 'Közigazgatás- és Közzolgáltatás-fejlesztési Stratégia 2014–2020', 2015.
30. Moon, Jae M, 'The evolution of E-government among Municipalities: Rhetoric or Reality?' *Public Administration Review* 62, no 4 (2002), 424–433. Online: <https://doi.org/10.1111/0033-3352.00196>
31. Németh, Erzsébet, Tamás Bálint Vargha and Ágnes Katalin Pályi, 'Nemzetközi korrupciós rangsorok tudományos megbízhatósága'. *Pénzügyi Szemle* 64, no 3 (2019), 321–337. Online: https://doi.org/10.35551/PSZ_2019_3_1
32. *OECD Glossary of Key Terms in Evaluation and Results Based Management*. Paris: OECD Publications, 2002.
33. OECD, 'Hungary: Public Administration and Public Service Development Strategy, 2014–2020', 13 December 2017. Online: <http://dx.doi.org/10.1787/9789264286535-en>
34. Pirog, Maureen A, 'Data will drive innovation in public policy and management research in the next decade'. *Journal of Policy Analysis and Management* 33, no 2 (2014), 537–543. Online: <https://doi.org/10.1002/pam.21752>
35. Pueyo, Thomas, 'Coronavirus: The Hammer and the Dance', 19 March 2020. Online: <https://tomaspuoyo.medium.com/coronavirus-the-hammer-and-the-dance-be9337092b56>
36. Rotberg, Robert I, *On Governance: What It Is, What It Means and Its Policy Uses*. McGill-Queen's University Press, 2016.
37. Schönert, Matthias, 'Städteranking und Imagebildung'. *BAW Institute für Wirtschaftsforschung, Monatsbericht* 2 (2003).
38. Serikbayeva, Balzhan, Kanat Abdulla and Yessengali Oskembayev, 'State Capacity in Responding to COVID-19'. *International Journal of Public Administration*, 07 December 2020. Online: <https://doi.org/10.1080/01900692.2020.1850778>
39. Török, Zoltán, 'Unintended outcomes effects of the European Union and the International Monetary Fund on Hungary's public sector and administrative reforms'. *Public Policy and Administration* 35, no 2 (2020), 158–178. Online: <https://doi.org/10.1177/0952076718789731>
40. Ullah, Attah, Chen Pinglu, Saif Ullah, Hafiz Syed Mohsin Abbas and Saba Khan, 'The Role of E-Governance in Combating COVID-19 and Promoting Sustainable Development: A Comparative Study of China and Pakistan'. *Chinese Political Science Review* 6 (2020). Online: <https://doi.org/10.1007/s41111-020-00167-w>
41. United Nations, 'E-Government Survey 2020, Digital Government in the Decade of Action for Sustainable Development', 2020. Online: [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20\(Full%20Report\).pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf)

42. Varga, Bálint Tamás, Erzsébet Németh and Ágnes Katalin Pályi, 'Mit mutatnak a versenyképességi rangsorok?' *Pénzügyi Szemle* 64, no 3 (2019), 352–370. Online: https://doi.org/10.35551/PSZ_2019_3_3
43. Wirtz, Bernd W, Wilhelm M Müller and Jan C Weyerer, 'Digital Pandemic Response Systems: A Strategic Management Framework Against Covid-19'. *International Journal of Public Administration*, 21 December 2020. Online: <https://doi.org/10.1080/01900692.2020.1858316>

András Bojtó currently serves as a researcher of the Social Research Program at the University of Public Service. He is an applied economist and expert of international relations, studied at the Eötvös Loránd University, Budapest University of Technology and Economics and Andrásy Universität Budapest. He holds several publications including the role of state in economic policy and various forms of evaluation techniques in public administration. His current research interests focus on the international measurement of public administration development programs, smart city evaluations and public sector innovation.

Gábor Bozsó currently serves as a researcher and project leader of the Social Research Program at the National University of Public Service. He is an economist and expert of public and business administration, studied at Corvinus University of Budapest. He has published several articles in the field of policy evaluation, governance performance and public management. His current researches are focusing on digital policy and competency evaluation, public sector innovation and data science in the public sector.

