DIGITAL COMPETITIVENESS IN THE CZECH REPUBLIC AND AUSTRIA

Martina Kuncová, Kateřina Berková, Dagmar Frendlovská, Robert Füreder, Margarethe Überwimmer, Barbara Haas

Abstract

Digital competitiveness is nowadays very important in terms of the ability to respond flexibly to changing conditions. The COVID pandemic tested many countries in terms of digital readiness - the better prepared people or businesses were, the easier it was to bring some processes and services online. This paper aims to assess digital competitiveness, i.e. the ability to adopt and implement digital technologies in businesses and government organisations, in Austria and the Czech Republic. Three selected rankings comparing the competitiveness of countries served as a basis for comparison. As expected, we have shown that Austria is also much further ahead than the Czech Republic in terms of digitalisation, where the Czech Republic outperforms Austria in only a few indicators.

Keywords: digital competitiveness, WDCR, GCI, DESI, Czech Republic, Austria

JEL classification: O57, O30, N70

Introduction

The development of the society, enterprises or economy is nowadays closely connected with information and communication technologies (ICT). The importance of ICT for society's functioning is today considerable, and thus its overall impacts on the economy and societal processes are also important. The philosophy and the idea of the information society as such are further developed e.g. in the concept of Frank Webster (2006) who defines the information society in terms of five basic categories - technological, economic, occupational, spatial and cultural. All these parts are interconnected. The development of information and communication technologies is influencing the development of the economy and at the same time it is reflected in the greater development of the service sector at the expense of manual labour. The new possibilities of online communication eliminate the traditional geographical distances and make it possible to connect different places within an office, a city, a region, a continent or the world in general. Last but not least, the development of technology is also reflected in the cultural sphere. For our grandmothers, the radio or television was a new technology, but it may not have been a standard feature of every household. In today's world, it is no longer conceivable that we would not have the opportunity to listen to online radios, podcasts or watch online television, various spots, blogs, social networks, etc. Contemporary culture is clearly more information-laden than its predecessors. We live in a media-saturated environment, which means that life is essentially about symbolization, about exchanging and receiving messages about ourselves and others (Webster, 2006).

New technologies are one of the most visible indicators of the digital era. The rapid development of the Internet and wireless technologies affects not only the development of the economy, but also education and the functioning of society as a whole. Today, it is no longer

conceivable for many people not to be online, i.e. anywhere, anytime, always and everywhere in contact with the network. Industry 4.0 takes this connectivity even further - towards the so-called Internet of Things, i.e. not only people but also products will also be constantly "in touch" of the network. Digital technology create recognition of a company on market, influence the creation of innovations and, in the long run, create and maintain long-term competitiveness (Martincevic, 2022). The increase of the technological options and the ICT development leads to higher demand for technical equipment but also for the IT knowledge. In global economy the changes and trends in one country influence other countries in their development. As the ICT level has a huge impact on so-called digital economy or on Industry 4.0 (especially in changing the business models as a tool in changing the impact of ICT on economy) the aim of this paper is the comparison of the digital competitiveness and ICT development.

This research is part of the INTERREG project "Cross Cultural Communication" in which, among other things, we investigate the differences between the Czech Republic and Austria in the field of digitalization and cultural differences. This paper therefore shows a basic comparison of the digital competitiveness of these two countries. The comparison focuses on the competitiveness of countries in technological readiness and the position of countries in the digital economy and society.

1 Digital Competitiveness

Digital competitiveness is usually examined in terms of multi-country comparisons. As Laitsou et al. (2020) state, the European Union (EU) aims to become a global leader in the digital economy. This idea was supported by several documentation series, such as Digital Single Market strategy, A Digital Agenda for Europe, European Broadband: Investing in Digitally Driven Growth, The EU's New Digital Single Market Strategy or Building a European Data Economy (Laitsou et al. 2020).

Most researchers use a variety of rankings focusing on digital competitiveness – among them the most widespread are the IMD World Digital Competitiveness Ranking, the Global Competitiveness Index and the Digital Economy and Society Index. The IMD World Digital Competitiveness Ranking (IMD-WDCR) compares 64 countries through three factors – knowledge, technology and future readiness (IMD World Digital Competitiveness Rankings, 2021). Veselica (2019) used these rankings to describe the situation of Croatia. Kolpak et al. (2021) suggested the usage of the IMD-WDCR and Global Competitiveness Index (GCI) for the vector model of digital economy. GCI is a measure computed by the World Economic Forum every year since 1979 on the basis of 12 pillars that offers insights into the economic prospects of up to 141 countries (World Economic Forum, 2020). John et al. (2017) investigated the factors in which Thailand has greater strength and more weakness when compared with the other ASEAN countries based on the GCI indicators. Kuncová and Doucek (2018) analysed V4 countries from the ICT point of views based on one GCI pillar.

One of the most widespread is The Digital Economy and Society Index (DESI), created by the European Commission (2022) which summarises indicators on Europe's digital performance and tracks the progress of EU countries. Česnauskė (2019) used DESI to assess the progress of the Baltic states towards developing a digital economy and society. DESI and the Networked Readiness Index (NRI) were used by Moroz (2017) to evaluate the degree of the development of the digital economy in Poland compared with several European countries. Laitsou et al.

(2020) used the DESI index and its five dimensions (Connectivity, Human Capital, Use of Internet Services, Integration of Digital Technology and Digital Public Services) to forecast progress under the Greek economic environment. DESI was also mentioned by Stavytskyy et al. (2019) in the study where they evaluated the effect of the increase in the purchasing power parity consumption index and unemployment among the active population on the structural units of the DESI. Stankovic et al. (2021) assess the digital competitiveness of European countries with the application of the multi-criteria analysis on the DESI data. Except of DESI, the International Digital Economy and Society Index (I-DESI), E-Government Development Index (EGDI), Human Capital Index (HCI) and IMD-WDCR were combined by Lixăndroiu (2018) to analyse the e-government process.

2 Data and methodology

In this paper a selected data from IMD-WDCR, GCI and DESI are used to analyse and compare the situation in the Czech Republic and Austria in terms of digital competitiveness to highlight the strengths and weaknesses of each country. As it was mentioned above, IMD-WDCR is based on three factors - knowledge, technology and future readiness – in each 3 main parts are mentioned (Figure 1) but finally 52 criteria are aggregated at all and 64 countries are included.

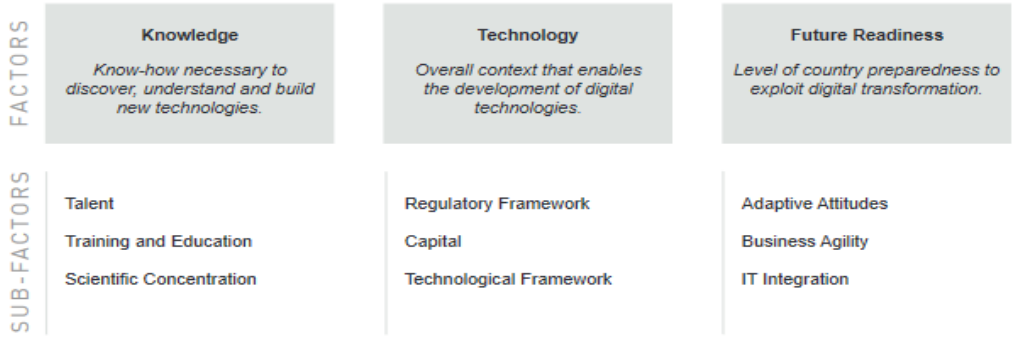

Figure 1: IMD World Digital Competitiveness Ranking main factors. Source: IMD World Digital Competitiveness Rankings (2021)

GCI covers 141 countries which are compared in 12 pillars. For the digital competitiveness comparison, the 3rd pillar (ICT adoption) is the most suitable one but we use also 6th pillar (Skills) and one part of the 12th pillar (Innovation capability) – finally 18 criteria were used (see Table 1)

Table 1: GCI selected pillars and criteria

3rd pillar: ICT adoption	ICT adoption	3.01 Mobile-cellular telephone subscriptions per 100 pop
		3.02 Mobile-broadband subscriptions per 100 pop.
		3.03 Fixed-broadband Internet subscriptions per 100 pop.
		3.04 Fibre internet subscriptions per 100 pop.
		3.05 Internet users % of adult population
6th pillar: Skills	Current workforce0–100	6.01 Mean years of schooling years
	Skills of current workforce0–100-	6.02 Extent of staff training 1–7 (best)
		6.03Quality of vocational training 1–7 (best)
		6.04 Skillset of graduates 1–7 (best)
		6.05 Digital skills among active population 1–7 (best)
		6.06 Ease of finding skilled employees 1–7 (best)
	Future workforce 0–100	6.07 School life expectancy years
	Skills of future workforce 0–100	6.08 Critical thinking in teaching 1–7 (best)
		6.09 Pupil-to-teacher ratio in primary education ratio
12th pillar: Innovation capability	Research and development	12.05 Scientific publications score
		12.06 Patent applications per million pop.
		12.07 R&D expenditures% GDP
		12.08 Research institutions prominence 0–100 (best)

Source: World Economic Forum (2020)

DESI covers 5 key areas which are important for the digital competitiveness: human capital, connectivity, integration of digital technology, digital public services, research & development in ICT (European Commision, 2022).

Except of these 3 rankings, basic data from OECD (2022) are used to describe the situation in the Czech Republic and Austria. As only 2 countries are compared, it is not possible (or useful) to apply any method of the multi-criteria evaluation, that is why only the main strengths and weaknesses are highlited and the biggest differences are described.

3 Results and discussion

The fact that the so-called post-communist countries, i.e. the countries of the Eastern bloc (including the Czech Republic) are still in a worse position compared to Western Europe (which also includes Austria) is well known and concerns especially the economic situation. However, our aim is to compare the situation in terms of digitalisation, ICT and the factors that influence it, e.g. education. Table 2 shows the basic statistical indicators for both countries. It is evident that although Austria has lower population, it has at about 32 % higher GDP than the Czech Republic and therefore average wages or education spending are significantly higher, even though employment is somewhat lower. According to OECD data (2022), the only factor where the Czech Republic has better position and score is the ICT value added as the difference between the Information and Communication Technology sector gross output and intermediate consumption. The Czech Republic with its 5.7% has 13th place in OECD countries while Austria 28th place.

Table 2: National statistics of Austria and the Czech Republic

basic national statistics	Population (million inhabit.)	GDP (USD per capita)	Education spending (USD per capita)	GDP spending on R&D (% of GDP)	ICT Value Added (% of val.ad.)	Internet access (% of househ.)	Avg. Vages (USD)	Employment rate (% of working age population)
Austria	8.9	59393	20452	3.2	3.8	95	53132	73.3
Czech Republic	10.7	44920	16148	2	5.7	89.3	29885	75.1
AT/CZ (%)	83%	132%	127%	160%	67%	106%	178%	98%

Source: OECD (2022)

IMD-WDCR compares 64 countries in 3 main factors: knowledge, technology and future readiness. Table 3 shows the position of Austria and the Czech Republic and Table 4 describes the positions of Austria (AT) and the Czech Republic (CZ) in 5 years period. In these areas, Austria is the strongest in terms of knowledge, while in the Czech Republic it was rather technology, but it is gradually losing its position.

Table 3: IMD World Digital Competitiveness Ranking in 2021

Knowledge			Technology			Future readiness		
1	Switzerland	86.929	1	Honk Kong SAR	92.656	1	USA	100.000
2	Sweden	86.485	2	Taiwan, China	88.713	2	Denmark	92.936
3	USA	85.601	3	Singapore	88.143	3	Switzerland	90.746
4	Singapore	84.132	4	USA	87.494	4	Netherlands	89.777
5	Honk Kong SAR	83.836	5	UAE	87.445	5	Korea Rep.	88.821
…	…	…	…	…	…	…	…	
10	Austria	77.181	32	Austria	62.161	16	Austria	76.399
35	Czech Republic	56.539	37	Czech Republic	58.187	37	Czech Republic	54.042

Source: IMD World Digital Competitiveness Rankings (2021)

Table 4: IMD World Digital Competitiveness Ranking in 5 years

Rankings in 64 countries		2017	2018	2019	2020	2021
AT	Overall	16	15	20	17	16
	knowledge	12	13	10	11	10
	technology	28	26	32	28	32
	future readiness	15	14	23	16	16
CZ	Overall	32	33	37	35	33
	knowledge	36	38	37	37	35
	technology	26	31	34	36	37
	future readiness	37	34	39	36	37

Source: IMD World Digital Competitiveness Rankings (2021)

If we take a closer look at the sub-factors included in these 3 areas, we can see (Table 5) that in the Knowledge category Austria significantly outperforms the Czech Republic in the area of training & education, where it ranks 5th among 64 countries, while the Czech Republic is only 45th. This fact may be influenced by the previously mentioned data on the amount of expenditure on education, which is higher in Austria. In the Future readiness category, there is also a diametric difference between the two countries' positions, with Austria performing best in the IT integration. Only in the Technology section do we see a better ranking for the Czech Republic than for Austria, but in both cases it is roughly in the middle of the countries surveyed, i.e. it cannot be said that the countries perform significantly better here, although the Czech Republic is slightly better off.

Table 5: IMD WDCR – sub-factors's position of Austria and the Czech Republic

2021	Knowledge			**Technology**			**Future readiness**		
	Talent	Training & education	Scientific concentration	Regulatory framework	Capital	Technol. framework	Adaptive attitudes	Business agility	IT integration
AT	15	5	15	26	32	38	21	18	11
CZ	28	45	30	44	29	32	35	32	36

Source: IMD World Digital Competitiveness Rankings (2021)

Table 6 summarizes the strengths and weaknesses in these areas according to the IMD-WDCR. It is clear that Austria is generally in a better position than the Czech Republic, and in the area of employee training it even reached the 1.place and in the criterion Pupil-teacher ratio (tertiary education) 2.place among 64 countries. The weakest point for Austria is the investment in telecommunications (60.place) and starting a business (53.place) which is also the weakest point for the Czech Republic (56.place) together with the public-private partnership (52.place).

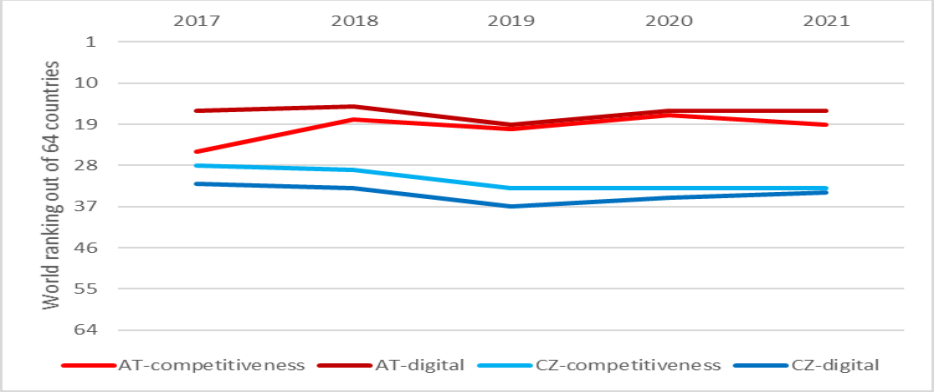

Figure 2: IMD World Digital Competitiveness Ranking – competitiveness & digital rankings.
Source: IMD World Digital Competitiveness Rankings (2021)

Based on IMD-WDCR we see (Figure 2) that the differences between Austria and the Czech Republic in competitiveness and digital rankings between countries have widened since 2017. While Austria tends to improve its position compared to other countries, the Czech Republic tends to worsen in this category.

Table 6: IMD WDCR – Strengths and weaknesses for Austria and the Czech Republic

strengths and weaknesses	sub-factor	criterion	ranking AT	ranking CZ
knowledge	Talent	Net flow of international students	5	13
		Digital/Technological skills	45	41
	Training & education	Employee training	1	45
		Pupil-teacher ratio (tertiary education)	2	35
		Higher education achievement	36	48
	Scientific concentration	Total expenditure on R&D (%)	6	19
		Total R&D personnel per capita	6	18
		R&D productivity by publication	49	35
technology	Regulatory framework	Intelectual property rights	11	34
		Starting a business	53	56
	Capital	IT & media stock market capitalization	42	17
		Country credit rating	12	21
		Investment in telecommunications	60	46
	Technological framework	High-tech exports (%)	36	18
		Internet bandwidth speed	41	40
future readiness	Adaptive attitudes	E-participation	6	50
		Attitudes towards globalisation	51	49
	Business agility	World robots distribution	23	16
		Knowledge transfer	17	37
	IT integration	Cyber security	6	41
		Public-private partnership	35	52

Source: IMD World Digital Competitiveness Rankings (2021)

Global Competitiveness Index GCI offers the latest data from the year 2019 and compares 141 countries in 12 pillars. Table 7 summarizes the scores and places for Austria and the Czech Republic. We see that both countries are perceived as macroeconomically stable. What is important for our analysis is the position within Pillar 3 (ICT adoption), where both countries are not doing very well, and we also looked at Pillar 6 (Skills - both countries are doing very well), and part of the indicators from Pillar 12 (Innovation capability - Austria is better off).

Table 7: GCI 2019 comparison

GCI 2019		score AT	score CZ	place AT	place CZ
overall		77	71	21	32
enabling environment	1. Institutions	74	61	14	44
	2. Infrastructure	89	84	10	20
	3. ICT adoption	**66**	**68**	**50**	**42**
	4. Macroec.stability	100	100	1	1
human capital	5. Health	95	86	15	48
	6. Skills	**79**	**73**	**16**	**20**
markets	7. Product markets	66	57	17	55
	8. Labour market	67	63	29	48
	9. Financial system	75	68	30	47
	10. Market size	65	65	43	42
innovations ecosystems	11. Business dynamism	69	69	30	32
	12. Innovation capability	**74**	**57**	**14**	**29**

Source: World Economic Forum, 2020

Looking at the detailed values (Table 8), GCI scores and country rankings, we see that Austria loses out in Pillar 3 especially in the indicator Fibre internet subscriptions per 100 pop. (75.place). As far as Pillar 6 is concerned, Austria's strengths in the area of the quality of

vocational training and the Czech Republic's weaknesses in finding skilled employees (134.place) are again confirmed. In Pillar 12, the difference between Austria and the Czech Republic in the indicator R&D expenditures (% GDP) is again visible, but the 22nd place among 141 countries is not so bad for the Czech Republic.

Table 8: GCI 2019 comparison in selected pillars

GCI 2019	criterion	value AT	value CZ	score AT	score CZ	rank AT	rank CZ
3rd pillar: ICT adoption	3.01 Mobile-cellular telephone subscriptions per 100 pop	123.5	119.2	100	99,3	56	66
	3.02 Mobile-broadband subscriptions per 100 pop.	88	88.1	N/A	N/A	49	47
	3.03 Fixed-broadband Internet subscriptions per 100 pop.	28.4	29.9	56.7	59.9	33	28
	3.04 Fibre internet subscriptions per 100 pop.	0.6	5.4	N/A	N/A	75	41
	3.05 Internet users % of adult population	87.7	80.7	87.7	80.7	25	40
6th pillar: Skills (years or scale 1-7 best)	6.01 Mean years of schooling years	12.6	12.7	83.7	84.9	18	15
	6.02 Extent of staff training	5.1	4.5	68.4	58	13	39
	6.03 Quality of vocational training	5.7	4.5	78.9	58.1	2	45
	6.04 Skillset of graduates	5.3	4.4	70.8	56.9	9	46
	6.05 Digital skills among active population	4.8	4.8	63	63	40	41
	6.06 Ease of finding skilled employees	4.5	3.2	57.6	37.5	48	134
	6.07 School life expectancy years	16.3	16.8	90.5	93.5	29	19
	6.08 Critical thinking in teaching	4.1	3.3	51	39.1	35	79
	6.09 Pupil-to-teacher ratio in primary education ratio	10	18.9	100	77.7	6	72
12th pillar: Innovation capability	12.05 Scientific publications score	579	396.7	94.2	88.6	17	32
	12.06 Patent applications per million pop.	234.27	29.58	100	62.8	8	27
	12.07 R&D expenditures% GDP	3.1	1.7	100	55.9	7	22
	12.08 Research institutions prominence 0–100 (best)	0.06	0.08	16.1	22.8	32	24

Source: World Economic Forum, 2020

The comparison based on Digital Economy and Society Index (DESI) from 2021 confirms the already mentioned differences between Austria and the Czech Republic. This index compares 27 EU countries on the basis of 4 dimensions, 10 sub-dimensions and 33 indicators. Austria holds 10.place while the Czech Republic 18.place in DESI 2021 (European Commission, 2022).

Table 9: DESI 2021 results

DESI 2021	rank AT	rank CZ	score AT	score CZ
overall	10	18	56,9	47,4
1.Human capital	9	15	53,3	47,2

2.Connectivity	11	22	53	44,6
3.Integration of digital technology	11	15	41,3	39,1
4.Digital public services	9	20	79,8	58,6

Source: European Commission (2022)

The main differences between these two countries is in the dimension 4.Digital public services, where Austria was on the 9th place in EU while the Czech Republic was 20th (see Table 9). Table 10 describes selected sub-dimension indicators where it is clear that Austria has better values in all indicators in part 4 (red colour in Table 10 means that Austria is better), the biggest difference is in "Pre-filled forms". The only part where the Czech Republci seems to be better than Austrai, is in the 2.dimension "Connectivity" with better scores in "fixed broadband take-up" and "fast broadband coverage" but the final result for the Czech Republic is degraded mainly due to the 5G indicator where the Czech Republic did not score any points out of 100 possible whike Austria has 50 points (see Table 10).

Table 10: DESI 2021 results in sub-indicators (red values:AT score is better, blue values: CZ score is better, positive difference means AT is better, negative when CZ is beter)

Sub-indicators	score AT	score CZ	difference
1a2 Above basic digital skills	39	26	13
1b2 Female ICT specialists	20	10	10
1b3 Enterprises providing ICT training	18	25	-7
2a1 Overall fixed broadband take-up	73	83	-10
2a2 At least 100 Mbps fixed broadband take-up	12	24	-12
2b1 Fast broadband (NGA) coverage	87	97	-10
2c3 5G coverage	50	0	50
2c4 Mobile broadband take-up	80	71	9
2d1 Broadband price index	78	59	19
3b2 Social media	30	20	10
3b6 ICT for environmental sustainability	70	56	14
3b7 e-Invoices	22	12	10
3c1 SMEs selling online	22	29	-7
3c2 e-Commerce turnover	10	18	-8
4a1 e-Government users	81	64	17
4a2 Pre-filled forms	75	45	30
4a3 Digital public services for citizens	88	71	17
4a4 Digital public services for businesses	85	76	9
4a5 Open data	90	72	18

Source: European Commission (2022)

Conclusion

Although Austria is a smaller country than the Czech Republic in terms of population, it still performs better in economic terms when compared to each other. In the Czech Republic, the influence of the previous socialist era is still evident, and it has not yet managed to move closer to so-called Western Europe. As part of the comparison, we focused on the digital competitiveness of both countries, using existing indicators (WDCR, GCI, DESI). In all cases, Austria's superiority is evident, with minor exceptions in ICT and fixed broadband take-up,

where the situation seems to be slightly better in the Czech Republic. In addition to higher GDP per capita and higher education spending per capita, Austria dominates in better training and education, especially in tertiary education. The results obtained are important for mutual knowledge and understanding of the differences in these countries, especially with regard to the focus of the INTERREG project "Cross-Cultural Communication Network", which aims to create a cross-border communication network involving both educational institutions and enterprises cooperating with the AT/CZ partner.

Acknowledgements

This research was conducted as part of the Interreg Austria-Czech Republic "Cross Culture Communication Network" funded by the European Fund for Regional Development.

References

Česnauskė, J. (2019). Digital Economy and Society: Baltic states in the EU context. *Economics and Culture*, *16*(1), 80–90. https://doi.org/10.2478/jec-2019-0009

European Commission (2022). The Digital Economy and Society Index — Countries' performance in digitisation. Retrieved April 30, 2022 from: https://digital-strategy.ec.europa.eu/en/policies/countries-digitisation-performance

World Economic Forum (2020) - Global Competitiveness Report: Special Edition 2020. Retrieved May 1, 2022, from https://www.weforum.org/reports/the-global-competitiveness-report-2020/

IMD World Digital Competitiveness Rankings (2022). IMD business school. Retrieved May 1, 2022, from https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/

John, V. K., Duangekanog, D., Wichayachakorn, A., & Vikitset, N. (2017). The Global Competitiveness of Thailand: An Empirical Analysis of the ASEAN Community. *AU EJournal of Interdisciplinary Research*, 2(2). Retrieved April 30, 2022 from http://www.assumptionjournal.au.edu/index.php/eJIR/article/view/4231

Kolpak, E., Borisova, V., & Panfilova, E. (2021). Vector model of digital economy in the process of increasing the competitiveness of countries and regions. *Journal of Globalization, Competitiveness and Governability*, 15(2), 104-121.

Kuncová, M., & Doucek, P. (2018). Comparison of ICT development in V4 countries. *Hradec Economic Days*. https://doi.org/10.36689/uhk/hed/2018-01-050

Laitsou, E., Kargas, A., & Varoutas, D. (2020). Digital Competitiveness in the European Union Era: The Greek case. *Economies*, 8(4), 85. https://doi.org/10.3390/economies8040085

Lixăndroiu, D. (2018). Digital Competitiveness Indicators and the E-Government in Romania. *Journal of Smart Economic Growth*, 3(2), 107-122.

Martincevic, I. (2022). The correlation between digital technology and Digital Competitiveness. *International Journal for Quality Research*, *16*(2), 541–558. https://doi.org/10.24874/ijqr16.02-13

Moroz, M. (2017). The level of development of the Digital Economy in Poland and selected European countries: A comparative analysis. *Foundations of Management*, *9*(1), 175–190. https://doi.org/10.1515/fman-2017-0014

OECD (2022). OECD Data. Retrieved April 30, 2022 from https://data.oecd.org

Stankovic, J. J., Marjanovic, I., Drezgic, S., & Popovic, Z. (2021). The Digital Competitiveness of European Countries: A Multiple-Criteria Approach. *Journal of Competitiveness*, 13(2), 117–134. https://doi. org/10.7441/joc.2021.02.07

Stavytskyy, A., Kharlamova, G., & Stoica, E. A. (2019). The analysis of the Digital Economy and Society Index in the EU. *Baltic Journal of European Studies*, *9*(3), 245–261. https://doi.org/10.1515/bjes-2019-0032

Veselica, R. (2019). The Impact of Digital Innovation on National Competitiveness. *Economic and Social Development - Book of Proceedings of the 38th International Scientific Conference on Economic and Social Development*. Rabat, 21-22 March 2019, 441-448.

Webster, F. (2006). *Theories of the information society*. Routledge.

World Economic Forum (2020) - Global Competitiveness Report: Special Edition 2020. Retrieved May 1, 2022, from https://www.weforum.org/reports/the-global-competitiveness-report-2020/

Contact
Ing. Martina Kuncová, Ph.D.
College of Polytechnics Jihlava
Department of Economic Studies
Tolstého 16, 58601 Jihlava, Czech Republic
e-mail: martina.kuncova@vspj.cz

Ing. Kateřina Berková, Ph.D.
College of Polytechnics Jihlava
Department of Economic Studies

Tolstého 16, 58601 Jihlava, Czech Republic
e-mail: katerina.berkova@vspj.cz

Ing. Dagmar Frendlovská, Ph.D.
College of Polytechnics Jihlava
Department of Economic Studies
Tolstého 16, 58601 Jihlava, Czech Republic
e-mail: dagmar.frendlovska@vspj.cz

FH-Prof. Ing. Mag. Robert Füreder
University of Applied Sciences Upper Austria
Steyr Campus, School of Management
Address: Wehrgrabengasse 1-3, 4400 Steyr, Austria
e-mail: robert.fuereder@fh-steyr.at

FH-Prof. DI Dr. Margarethe Überwimmer
University of Applied Sciences Upper Austria
Steyr Campus, School of Management
Address: Wehrgrabengasse 1-3, 4400 Steyr, Austria
e-mail: margarethe.ueberwimmer@fh-steyr.at

Barbara Haas
University of Applied Sciences Upper Austria
Steyr Campus, School of Management
Address: Wehrgrabengasse 1-3, 4400 Steyr, Austria
e-mail: barbara.haas@fh-steyr.at