ECONOMICS & Sociology

Stryzhak, O., Tupa, M., & Rodzik, J. (2022). Relationship between the level of human development and institutional quality. *Economics and Sociology*, *15*(2), 274-295. doi:10.14254/2071-789X.2022/15-2/17

RELATIONSHIP BETWEEN THE LEVEL OF HUMAN DEVELOPMENT AND INSTITUTIONAL QUALITY

Olena Stryzhak
S. Kuznetz Kharkiv National University of Economic, Kharkiv, Ukraine
E-mail: olena.stryzhak@hneu.net
ORCID 0000-0002-9367-9061

Magdalena Tupa
Faculty of Social and Economic Relations, A. Dubček University of Trenčín, Slovakia
E-mail: magdalena.tupa@tnuni.sk
ORCID 0000-0003-4532-2292

Jaroslaw Rodzik
Jan Dlugosz University in Czestochowa, Slovakia
E-mail: j.rodzik@ujd.edu.pl
ORCID 0000-0001-8194-2291

ABSTRACT. Implementation of the sustainable socio-economic development goals is an important task for any country, which is why researchers pay attention to the analysis of factors that influence development. Human development is one of the components of development in a wide context. The level of human development largely depends on the quality of the institutional environment in a society. The article examines the relationship between the human development level and the institutional environment quality. Human Development Index (HDI) and Worldwide Governance Indicators (WGI) are used. The analysis includes data for 188 countries for the period from 2017 to 2019. Three clusters are obtained as a result of cluster analysis. The Spearman Rank Order and Kendall Tau Correlations are calculated for each cluster. The link between HDI and WDI is found to be directly positive. Moreover, the strength of the relationship depends on the quality of indicators in groups of countries - the higher the quality of indicators, the stronger the link between them. The results are obtained using the Statistica application package.

Received: April, 2021
1st Revision: March, 2022
Accepted: June, 2022

DOI: 10.14254/2071-789X.2022/15-2/17

JEL Classification: O15, D02, E02, H89

Keywords: human development, institutional environment, institutional environment of human development

Introduction

So many factors influence country development and the citizens' quality of life that it is often difficult to determine the key elements among them. The choice of suitable criteria for an accurate assessment of the development level has proven equally challenging. Of course, GDP or GNI as indicators of income are important in this regard for any country, but they do not reflect how aggregate income is distributed and used in a society. When a country has a high level of government corruption and social inequality, the goals of using income to develop and

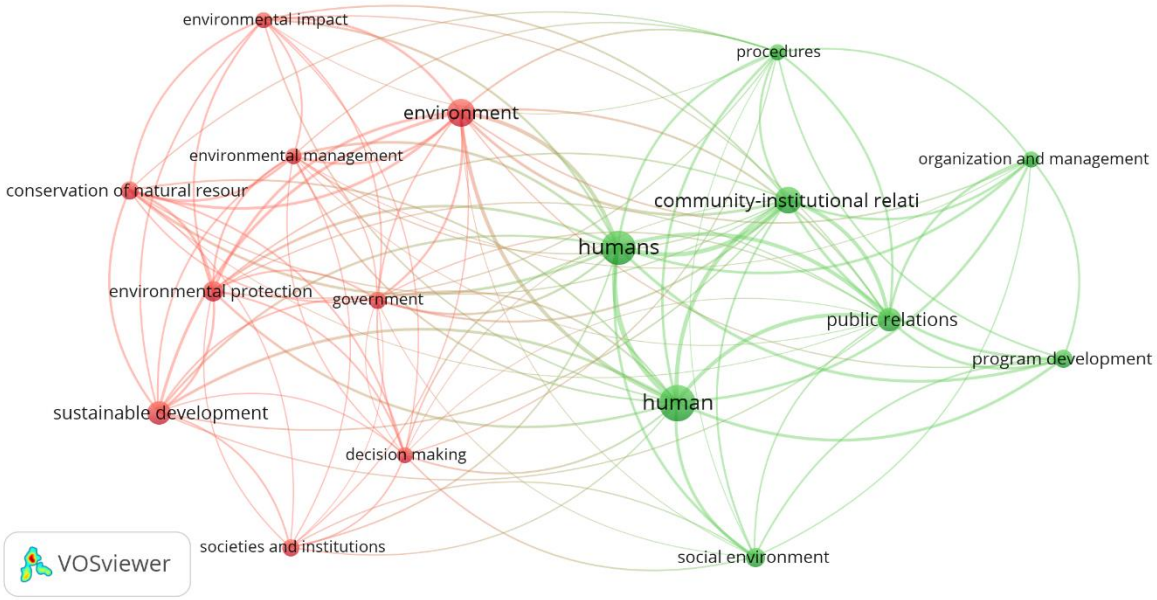
improve the well-being of citizens are not achieved. Therefore, the use of GDP as a universal indicator for assessing the country development level is somewhat limited, since non-economic criteria are also important.

In recent decades, many researchers have focused on social, legal, political, gender and other aspects of development. One of the most well-known indicators reflecting the humanistic aspects of development is the HDI. The index reflects the importance of income, but highlights that it is not the only indicator for assessing the development level of a society. The human development concept argues that education, protection of human rights and freedoms, issues of equality, and freedom of choice in all aspects of life are also essential. To facilitate development in a broad sense, it is important to understand how income distribution is regulated in a given society, i.e., which formal and informal rules govern the income distribution process, how fair it is, and how effective the institutions governing development are. Thus, the institutional environment also influences the implementation of development goals.

1. Literature review

The problems of human development, as well as the identification of its relationship with the institutional environment, have been attracting the attention of many scientists in recent years.

The analysis of publications presented in the Scopus database shows the main directions of the studies on this range of problems (*Graph 1*).



Graph 1. The main directions of research on the keywords "human development" and "institutional environment", 66 publications
Source: *own data*

As it is shown in Graph 1, the studies are focused on two main directions. The first (red colour in the diagram) considers the features of the institutional environment in the context of the external environment and sustainable development. The second direction focuses on problems of administration, regulation and social environment. The results of the visual

presentation show that there are few publications on this topic, and that confirms the topicality of this study.

Various indicators, including the quality of governance, are used to assess its impact on human development. Moreover, many researchers equate the quality of the institutional environment with the quality of governance.

Most studies confirm the relationship between the HDI and indicators of the quality of governance. In addition, scientists pay attention to the existence of a positive relationship between these indicators. The studies cover most countries over the world, and some are aimed at cross-country comparisons, while others are focused on identifying dependencies at the level of a particular country or territory.

Some works note that there is a relationship between economic growth and the quality of the institutional environment. For example, Pande R. and Udry C. (2005) focus on institutions de facto rather than de jure in their analysis of the institution's research program. The results of correlations between institutional development and growth observed in cross-country data prove that long-term growth is faster in countries with better contractual institutions, better law enforcement, strong protection of private property rights, good central government bureaucracy, smooth functioning of financial markets in the formal sector, high level of democracy and trust. Oláh et al. (2021)emphasized that trust in business partners positively impacted financial performance as a proxy for company performance. De Muro P., Tridiko P. (2008) assessed the possibilities of old and new institutional economics concerning economic growth and human development analysis. Jankauskas V. and Šeputienė J. (2009) found that the relationship between institutional performance and GDP per capita is quite strong and positive in countries with a high-quality institutional environment, and this relationship weakens as the quality of institutions declines.

Scientists analyze the relationship between human development and the quality of governance at the global level. A number of studies (Nandha M. and Smyth R. (2013), Ahmad Z., Saleem A. etc. (2014)) confirm the significant impact of the quality of governance on human development. Liotti G., Musella M., D'Isanto F. (2018), by panel data approach and SGMM, confirmed the relationship between democracy and HD, and it is positive for 18 former socialist countries over the period of 1990-2014. In addition, the researchers found that countries with a higher level of democracy also show a high level of HD. Vice versa, human development and economic growth have a slower pace in countries with an essential share of informal societal relations, including shadow economy spread. Evidence of the substantial impact of the shadow economy on human development, including its economic dimension valued by GDP, is available in the research of Mishchuk et al. (2018), Navickas et al. (2020). Some partial factors of social injustice, like corruption, violation of the role of the law, or obstacles to doing business are investigated in empirical studies fulfilled by Al-Naser & Hamdan (2021), Leal Rodríguez & Sanchís Pedregosa (2019). Arrording to (Wang et al., 2021) lack of social supports or even lower level of social support has a negative impact on the quality of life.

Based on analytically confirmed links between the level of human development and reverse impact on performance, some researchers obtained findings on the necessity of supporting core actions aiming at human development via knowledge management and training programs development (Samoliuk et al., 2021; Akimov et al., 2021; Kryshtanovych et al., 2022), ecological efforts to achieve the sustainable development goals (Naomi, & Akbar (2021), regulation of employment sphere for fair incomes ensuring (Oliinyk, 2020), measures of health support and maintaining a decent quality of life in all age groups, including the elderly (Podhorecka et al., 2021; Wojciechowski et al., 2021).

Issues of cross-country comparisons are considered in separate studies. Otterwick M. (2011), in his article, tries to answer two questions: what good governance is and how it is

related to human development, and why China is ahead of India in HDI. The results show that HDI in China is 28% higher than in India, but the quality of governance in China is lower by some indicators. Keser A. and Gökmen Y. (2017) concludedthat more effective governance in any of the 33 EU member countries and countries, candidates for EU membership, results in higher indicators of the level of human development. Panel data cover the period from 2002 to 2012. Tsegaw P. C., Drive H. (2020) obtained similar results for 49 African countries. The authors concluded that most countries with high quality of governance also have high HDI indicators for 2000-2018. The research by Ulas E., Keskin B. for 20 countries for the period of 2010-2014 (2017) showed a positive correlation between the HDI and the main macroeconomic indicators. The economic efficiency indicators such as growth rates, GDP per capita, youth unemployment and inflation level were analyzed. Hysa E., Çela A. (2019) focused on defining the relationship between governance and human development in 27 European countries using panel data for the period of 2002-2017. It can be seen from the results of the analysis that all variables of effective governance are positively correlated with HDI. However, the Granger causality test results showed that only the variable "voice and accountability" with a significance level of 10% determines HDI. The rest of the variables turned out to be statistically insignificant.

Also, the interest of scientists is focused on identifying the mutual influence of HD and WDI at the level of countries (territories). In particular, the realization of high-quality public policy ensures high rates of economic growth and human development (the example of India (Pradhan R. P. and Sanyal G. S. (2011)), contributes to the improvement of the quality of life (case of Spain, Cárcaba A., González E., Ventura J. and Arrondo R. (2017)), has a positive effect on the level of human development (Gulu District, Justus B. and Uma A. D. (2016)). Besides, political institutions such as democracy, the electoral system, and constitutional agreements also impact human development. (Gerring J., Thacker S. C. (2002)) Human development is also positively influenced by ICT and the level of economic freedom (Türen U., Gökmen Y., Keser A. (2016)).

2. Methodology, data analysis and research results

The purpose of the study is to assess the differences in the level of human development in institutional environment formed by institutions of different quality.

The hypothesis of the study is that the level of influence of the quality of institutional environment on human development is not the same for different countries. The level of human development in a country depends on the quality of institutions. Accordingly, high-quality institutional environment stimulates human development.

The Human Development Index (HDI) is an indicator of the level of human development. In the context of this study, we accept that the quality of institutional environment is determined by Worldwide Governance Indicators (WGI).

The indicators cover six aspects of governance:

1. Voice and Accountability (VA) reflects citizens' perception of the opportunity to participate in elections and freely express their thoughts and opinions.

2. Political Stability and Absence of Violence / Terrorism (PV) reflects the perception of the political regime reliability, its resistance to unconstitutional means of destabilization.

3. Government Effectiveness (GE) reflects the population's assessment of the quality of public services, including public policy.

4. Regulatory Quality (RQ) reflects the perception of the government's ability to create a good legal framework and implement effective private sector regulation policies.

5. Rule of Law (RL) reflects how citizens follow legal norms and their confidence in the justice system.

6. Control of Corruption (CC) reflects the extent to which state structures use their position to pursue their personal interests and obtain preferences (Kaufmann, D., Kraay A. and Mastruzzi M., 2010)).

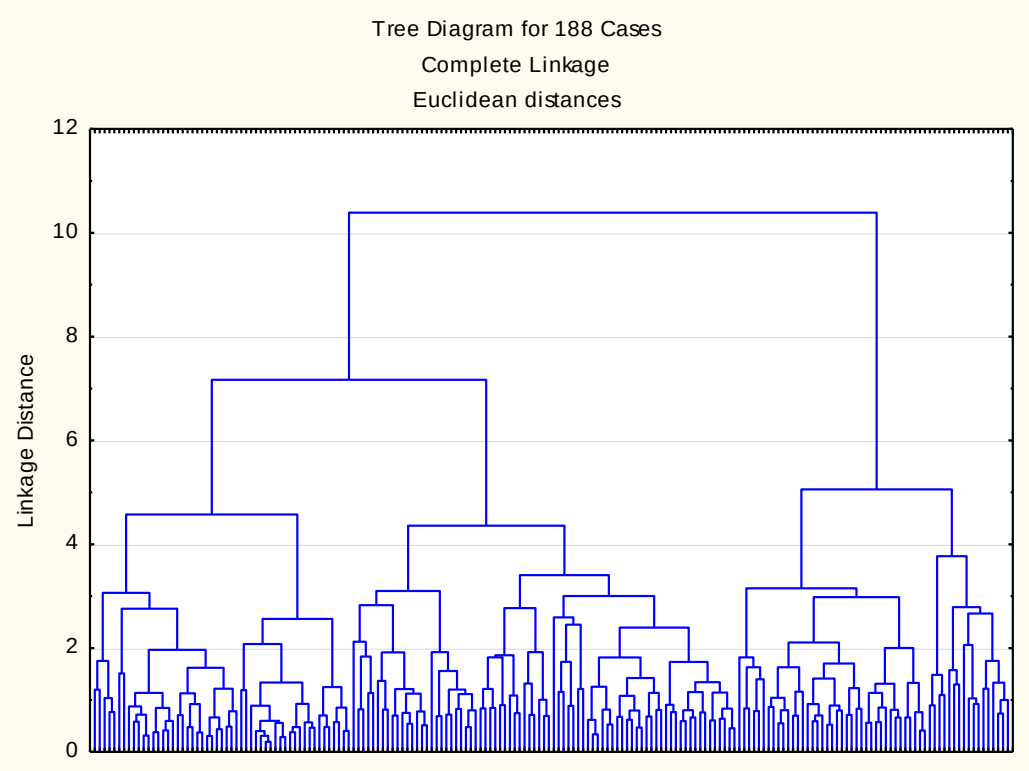
The World Bank calculates Worldwide Governance Indicators according to the method Kaufmann D., Kraay A., Mastruzzi M. (2010).

The indicators take a value in the range from -2.5 to 2.5, where a higher value of the indicator reflects more effective administration.

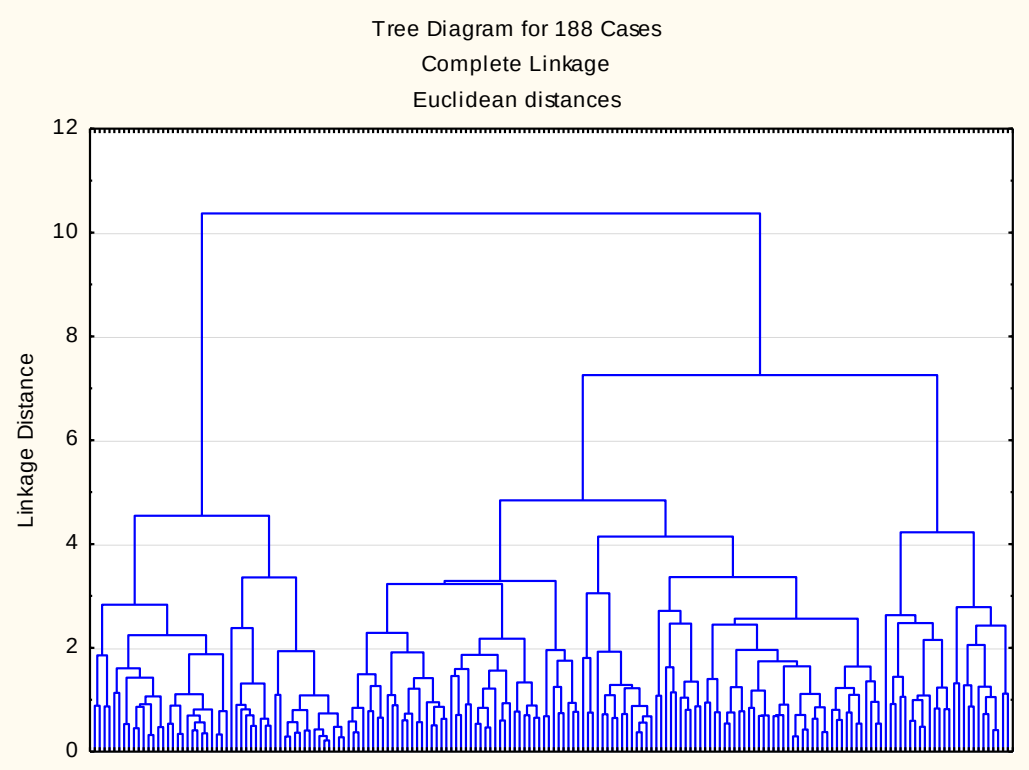
This study considered the features of the relationship between HDI and WGI. The panel sample includes comparable data for 2017-2019 for 188 countries for which data are available for the two analyzed indicators for the given period.

First of all, to analyze the relationship between HDI and WGI, it is necessary to find out whether such dependence is homogeneous for the entire sample, or whether it varies between countries in accordance with the value of the indicators.

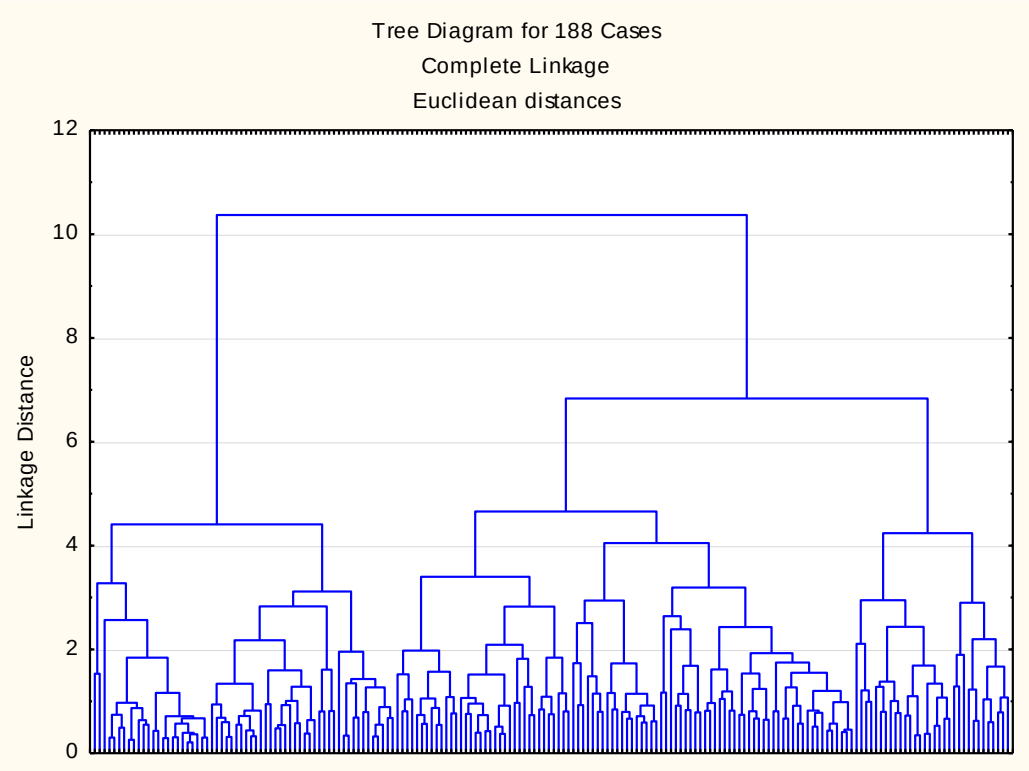
First, let's find out whether the indicators form clusters. Before the cluster analysis procedure, the data were subjected to normalization procedure. As a rule, we accept complete linkage method, as a proximity measure - the Euclidean distance. The results of the analysis are presented in *Graphs 2-4*.



Graph 2. Distribution of countries by groups for 2017 (normalized values)
Source: *own data*



Graph 3. Distribution of countries by groups for 2018 (normalized values)
Source: *own data*



Graph 4. Distribution of countries by groups for 2019 (normalized values)
Source: *own data*

The results of cluster analysis, presented in *Graphs 2-4*, indicate that the analyzed indicators form three clearly expressed clusters.

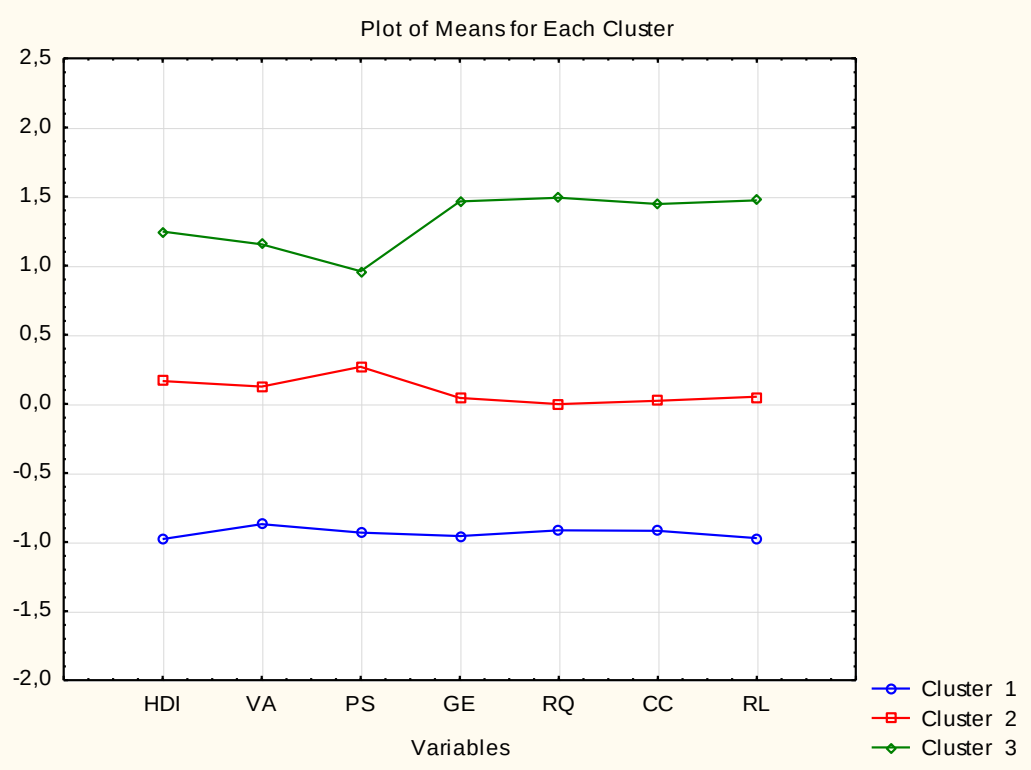
Table 1 gives an idea of the differences between the clusters for the period of 2017-2019.

Table 1. Analysis of Variance

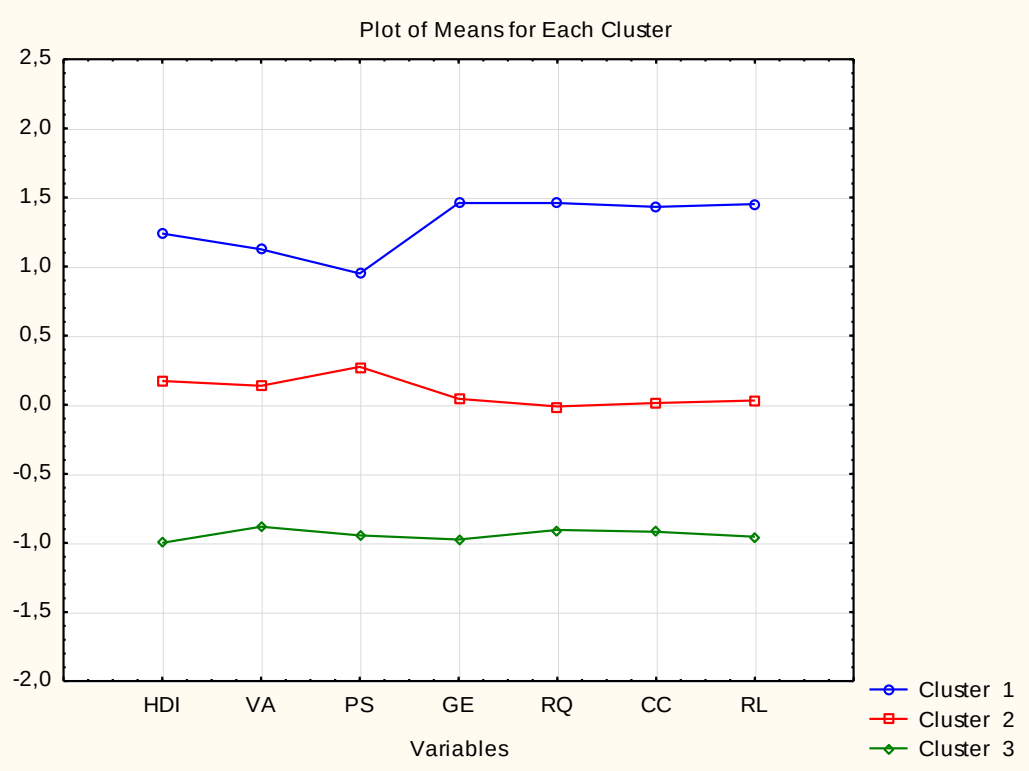
Variable	Between SS	df	Within SS	df	F	signif. p
			2017			
HDI	126,6964	2	60,30361	185	194,3402	0,000000
VA	103,8210	2	83,17902	185	115,4551	0,000000
PS	99,2656	2	87,73444	185	104,6575	0,000000
GE	145,4751	2	41,52493	185	324,0570	0,000000
RQ	143,4913	2	43,50871	185	305,0641	0,000000
CC	138,5712	2	48,42883	185	264,6736	0,000000
RL	148,4404	2	38,55962	185	356,0911	0,000000
			2018			
HDI	130,2728	2	56,72720	185	212,4243	0,000000
VA	104,1284	2	82,87160	185	116,2265	0,000000
PS	101,3825	2	85,61754	185	109,5322	0,000000
GE	149,3092	2	37,69084	185	366,4311	0,000000
RQ	140,6806	2	46,31941	185	280,9395	0,000000
CC	139,0459	2	47,95410	185	268,2095	0,000000
RL	145,7347	2	41,26530	185	326,6778	0,000000
			2019			
HDI	132,3365	2	54,66354	185	223,9358	0,000000
VA	103,3532	2	83,64681	185	114,2921	0,000000
PS	100,3267	2	86,67330	185	107,0713	0,000000
GE	148,4223	2	38,57774	185	355,8803	0,000000
RQ	142,0932	2	44,90681	185	292,6865	0,000000
CC	139,3387	2	47,66125	185	270,4258	0,000000
RL	147,6731	2	39,32687	185	347,3392	0,000000

Source: *own compilation*

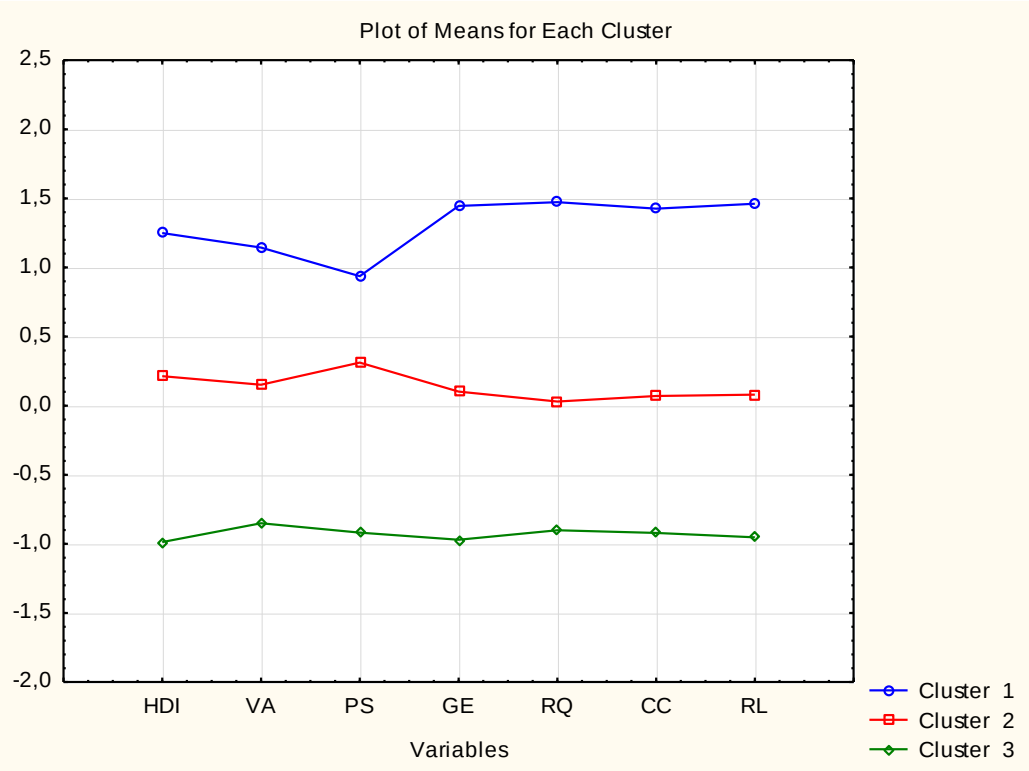
The result is statistically reliable (significant), since the p-level (statistical signification) does not exceed 0.05. The values of the variables in each cluster are shown in *Graphs 5-7.*



Graph 5. HDI and WGI values in each cluster for 2017 (normalized values)
Source: *own data*



Graph 6. HDI and WGI values in each cluster for 2018 (normalized values)
Source: *own data*



Graph 7. HDI and WGI values in each cluster for 2019 (normalized values)
Source: *own data*

The distribution of countries by clusters is presented in Table 2 (Appendix).

The table shows that there is a stable belonging of countries to clusters. The exceptions are the countries, the number of which is 4 (highlighted in the Table in gray), which is 2.1% of the total sample and is within the statistical error of the sample.

Next, the Spearman Rank Order Correlations and the Kendall Tau Correlations for HDI and WGI were calculated for each country group. The results of the calculations are presented in *Table 3*.

Table 3. Spearman Rank Order and Kendall Tau Correlations

	Spearman Rank Order Correlations	Kendall Tau Correlations		Spearman Rank Order Correlations	Kendall Tau Correlations		Spearman Rank Order Correlations	Kendall Tau Correlations	
				2017					
	cluster 1 (65 cases)			cluster 2 (83 cases)			cluster 3 (40 cases)		
VA	-0,082	-0,067		-0,173	-0,127		0,600	0,421	
PS	0,212	0,141		-0,033	-0,018		0,268	0,174	
GE	0,466	0,337	T_{cr} =	0,447	0,312	T_{cr} =	0,829	0,648	T_{cr} =
RQ	0,123	0,076	0,17	0,547	0,389	0,15	0,793	0,589	0,22
CC	0,016	0,005		-0,010	-0,003		0,761	0,529	
RL	0,070	0,041		0,175	0,118		0,839	0,635	
				2018					
	cluster 1 (41 cases)			cluster 2 (82 cases)			cluster 3 (65 cases)		
VA	0,587	0,416		-0,150	-0,118		-0,116	-0,097	
PS	0,237	0,153		-0,063	-0,043		0,153	0,100	
GE	0,790	0,580	T_{cr} =	0,392	0,277	T_{cr} =	0,435	0,315	T_{cr} =
RQ	0,823	0,627	0,21	0,538	0,379	0,15	0,097	0,067	0,17
CC	0,756	0,524		-0,007	-0,001		-0,007	-0,012	
RL	0,840	0,639		0,166	0,110		0,084	0,057	
				2019					
	cluster 1 (40 cases)			cluster 2 (80 cases)			cluster 3 (68 cases)		
VA	0,547	0,380		-0,218	-0,168		-0,102	-0,083	
PS	0,287	0,190		-0,089	-0,059		0,136	0,084	
GE	0,788	0,582	T_{cr} =	0,409	0,287	T_{cr} =	0,406	0,288	T_{cr} =
RQ	0,817	0,607	0,22	0,544	0,397	0,15	0,093	0,067	0,16
CC	0,739	0,520		-0,002	0,006		0,008	0,001	
RL	0,828	0,633		0,154	0,106		0,057	0,036	

Source: *own compilation*

As a rule, when interpreting the results of the analysis using the Spearman coefficient, the level of the correlation between variables is determined by the modulus value and is considered moderate at $\rho > 0.5$ and strong at $\rho > 0.75$.

To determine the strength of linkage when interpreting the Kendall rank correlation coefficient, it is necessary to calculate the critical point:

$$T_{cr} = z_{cr}\sqrt{\frac{2(2n+5)}{9n(n-1)}},$$

where: n - sample size;

z_{cr} - the critical point of the two-tailed critical region, which is found by the table of the Laplace function.

According to the Laplace table, we find $z_{cr} = 1.96$.

Next, we calculate the value of the critical point for each cluster:

$$T_{cr\,2017(1)} = 1.96\sqrt{\frac{2(2\times 65+5)}{9\times 65(65-1)}} = 0.17;$$

$$T_{cr\,2017(2)} = 1.96\sqrt{\frac{2(2\times 83+5)}{9\times 83(83-1)}} = 0.15;$$

$$T_{cr\,2017(3)} = 1.96\sqrt{\frac{2(2\times 40+5)}{9\times 40(40-1)}} = 0.22;$$

$$T_{cr\,2018(1)} = 1.96\sqrt{\frac{2(2\times 41+5)}{9\times 41(41-1)}} = 0.21;$$

$$T_{cr\,2018(2)} = 1.96\sqrt{\frac{2(2\times 82+5)}{9\times 65(65-1)}} = 0.15;$$

$$T_{cr\,2018(3)} = 1.96\sqrt{\frac{2(2\times 65+5)}{9\times 65(65-1)}} = 0.17;$$

$$T_{cr\,2019(1)} = 1.96\sqrt{\frac{2(2\times 40+5)}{9\times 40(40-1)}} = 0.22;$$

$$T_{cr\,2019(2)} = 1.96\sqrt{\frac{2(2\times 80+5)}{9\times 80(80-1)}} = 0.15;$$

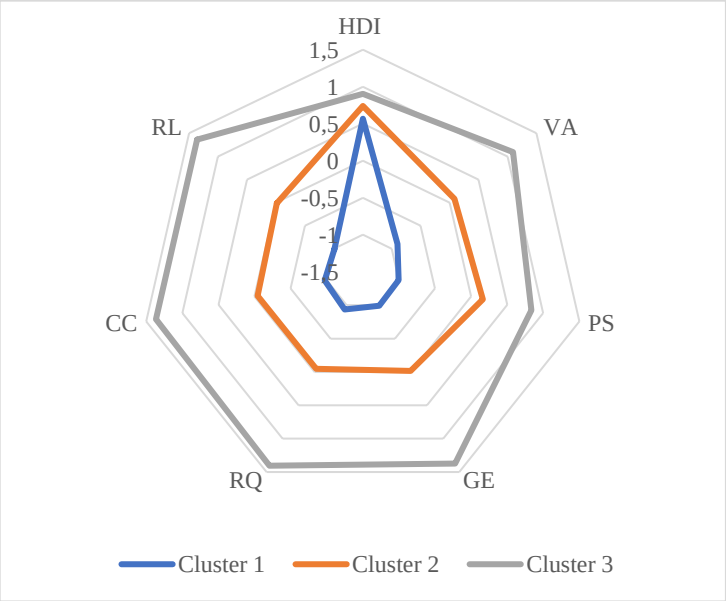
$$T_{cr\,2019(3)} = 1.96\sqrt{\frac{2(2\times 68+5)}{9\times 68(68-1)}} = 0.16.$$

For $\tau < T_{cr}$, the rank correlation is insignificant; for $\tau > T_{cr}$, the relationship is significant. Let us compare τ, obtained as a result of the analysis, with T_{cr}.

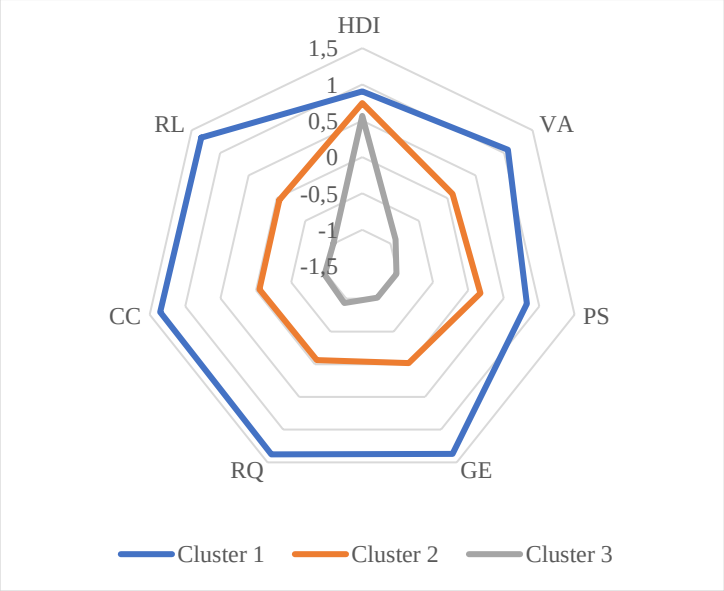
As a result of comparing the analyzed coefficients, it can be seen that the strength of linkage between indicators differs both between clusters and within a cluster for various WGI components. The significant correlations are highlighted in *Table 3* in red. Differences are also seen in the calculation of the Spearman and Kendall correlation coefficients, due to the corresponding differences in methodology.

Based on the data in *Table 3*, we can conclude that the relationship between HDI and WGI groups of countries differs in WGI components and is expressed in the following way: in 2017, in the first cluster, the strongest correlation exists between HDI and GE, in the second one - between HDI and GE; RQ; in the third one - between HDI and VA; GE; RQ; CC; RL; in 2018 and 2019, in the first cluster, the strongest correlation exists between HDI and VA; GE; RQ; CC; RL; in the second one- between HDI and GE; RQ; in the third one - between HDI and GE.

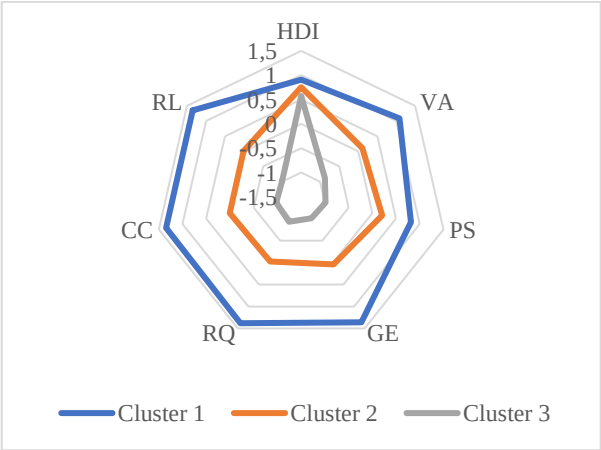
Graphs 8-10 show profiles of the indicators of each cluster based on the mean values of the indicators in each cluster. Visualization of the values of indicators on the chart allows us to compare indicators in each cluster.



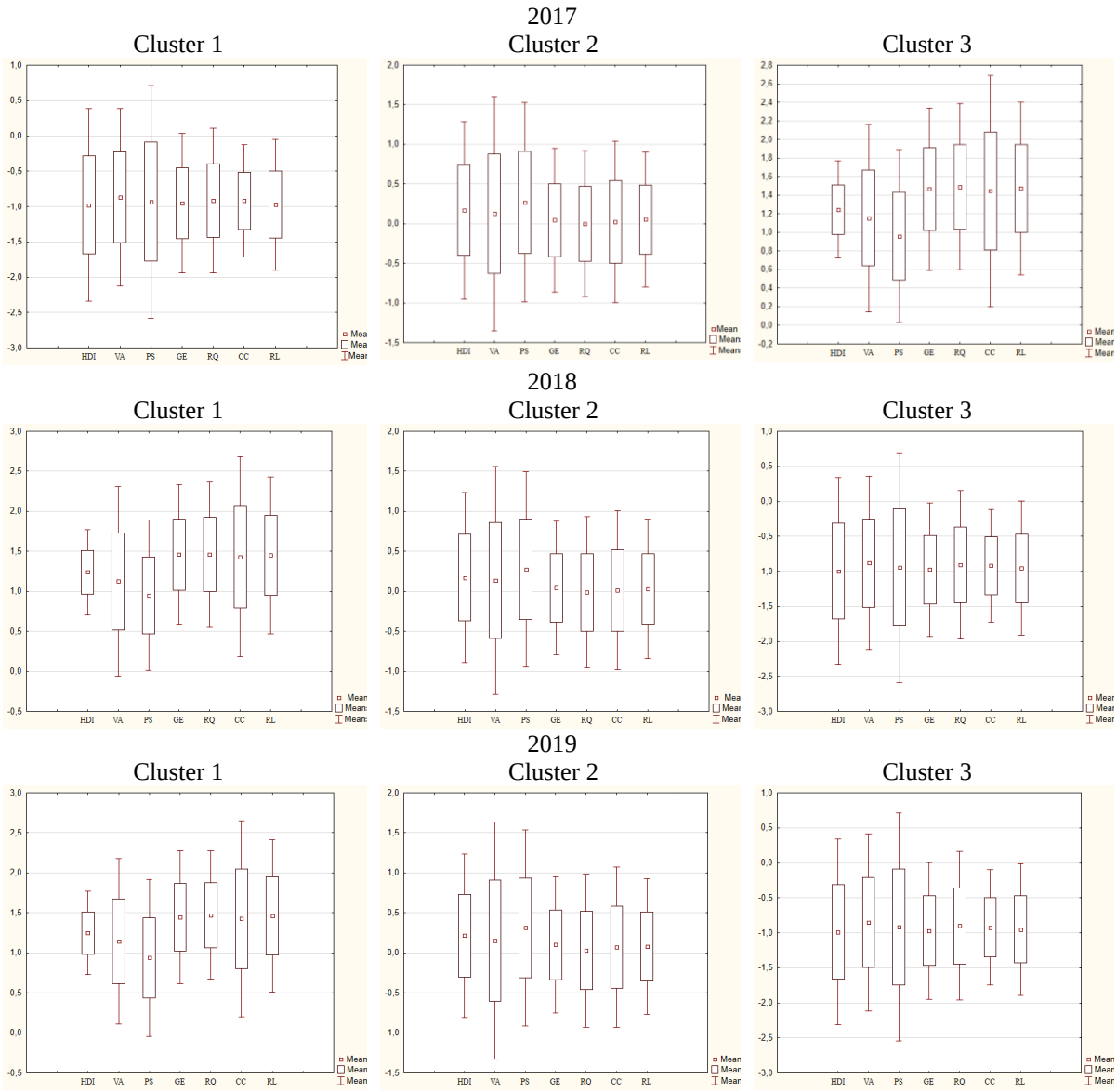
Graph 8. The profiles of indicators for each cluster for 2017
Source: *own data*



Graph 9. The profiles of indicators for each cluster for 2018
Source: *own data*



Graph 10. The profiles of indicators for each cluster for 2019
Source: *own data*



Graph 11. Box & whisker plot diagrams for clusters (standardised values of variables)

Thus, as a result of the analysis, it was found that countries form 3 clusters - with low, medium and high value of indicators. Moreover, this distribution is typical for the entire analyzed period.

Let's analyze in more detail the data in each cluster. With the help of Box & whisker plots we can analyze the distribution of variables in each cluster (*Graph 11*). In the diagram, the central point indicates the position of the central area; the rectangle denotes the nature of the variability around the central position; the line segments around the rectangles show the range of values of the variable.

According to *Graph 11* we can conclude that the distribution of variables differs across clusters, but tends to be stable over the analyzed period.

Let us determine the factor loadings for the analyzed variables. Factor analysis without rotation (*Table 4*) and factor analysis with rotation using the Varimax method (*Table 5*) were used for the analysis.

Table 4. Factor Loadings (Extraction: Principal components; Factor rotation: Unroteted; Marked loadings are > ,700000)

Variable	2017					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	-0,186821	-0,909061	-0,369136	-0,682168	-0,853871	-
VA	-0,678754	0,395898	-0,270469	0,610824	-0,435272	-
PS	-0,486550	-0,290532	-0,580429	0,610346	-0,442352	-
GE	-0,864154	-0,344360	-0,771684	-0,457897	-0,924576	-
RQ	-0,891842	0,124657	-0,612098	-0,573673	-0,899632	-
CC	-0,858536	0,178329	-0,777132	0,375668	-0,902576	-
RL	-0,906349	0,083606	-0,871973	0,166167	-0,979943	-
Expl. Var	3,833038	1,240449	2,880745	1,918490	4,553343	-
Prp. Totl	0,547577	0,177207	0,411535	0,274070	0,650478	-
Variable	2018					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	-0,866744	-	-0,317649	-0,694873	-0,135603	-0,921043
VA	-0,505115	-	-0,355932	0,551566	-0,726077	0,388333
PS	-0,358197	-	-0,581213	0,624400	-0,517621	-0,249309
GE	-0,915999	-	-0,746594	-0,467018	-0,857613	-0,378810
RQ	-0,915610	-	-0,606920	-0,591496	-0,876590	0,142141
CC	-0,890826	-	-0,785338	0,351134	-0,878867	0,153101
RL	-0,979625	-	-0,879206	0,106234	-0,918871	0,041030
Expl. Var	4,565327	-	2,880912	1,879503	3,934147	1,250103
Prp. Totl	0,652190	-	0,411559	0,268500	0,562021	0,178586
Variable	2019					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	-0,854505	0,257572	-0,292191	0,710802	-0,133285	-0,933109
VA	-0,383858	-0,695730	-0,230986	-0,593732	-0,728342	0,360247
PS	-0,399965	-0,706623	-0,607438	-0,614675	-0,561204	-0,187515
GE	-0,933792	0,198862	-0,746461	0,497418	-0,861725	-0,363334
RQ	-0,910627	0,241229	-0,585160	0,600146	-0,883717	0,091134
CC	-0,903031	-0,083768	-0,779258	-0,349147	-0,880868	0,184060
RL	-0,979695	-0,000133	-0,874125	-0,168830	-0,910759	0,041334
Expl. Var	4,513974	1,154454	2,778666	1,993590	3,992133	1,211536
Prp. Totl	0,644853	0,164922	0,396952	0,284799	0,570305	0,173077

Source: *own compilation*

Table 5. Factor Loadings (Extraction: Principal components; Factor rotation: Varimax normalized; Marked loadings are > ,700000)

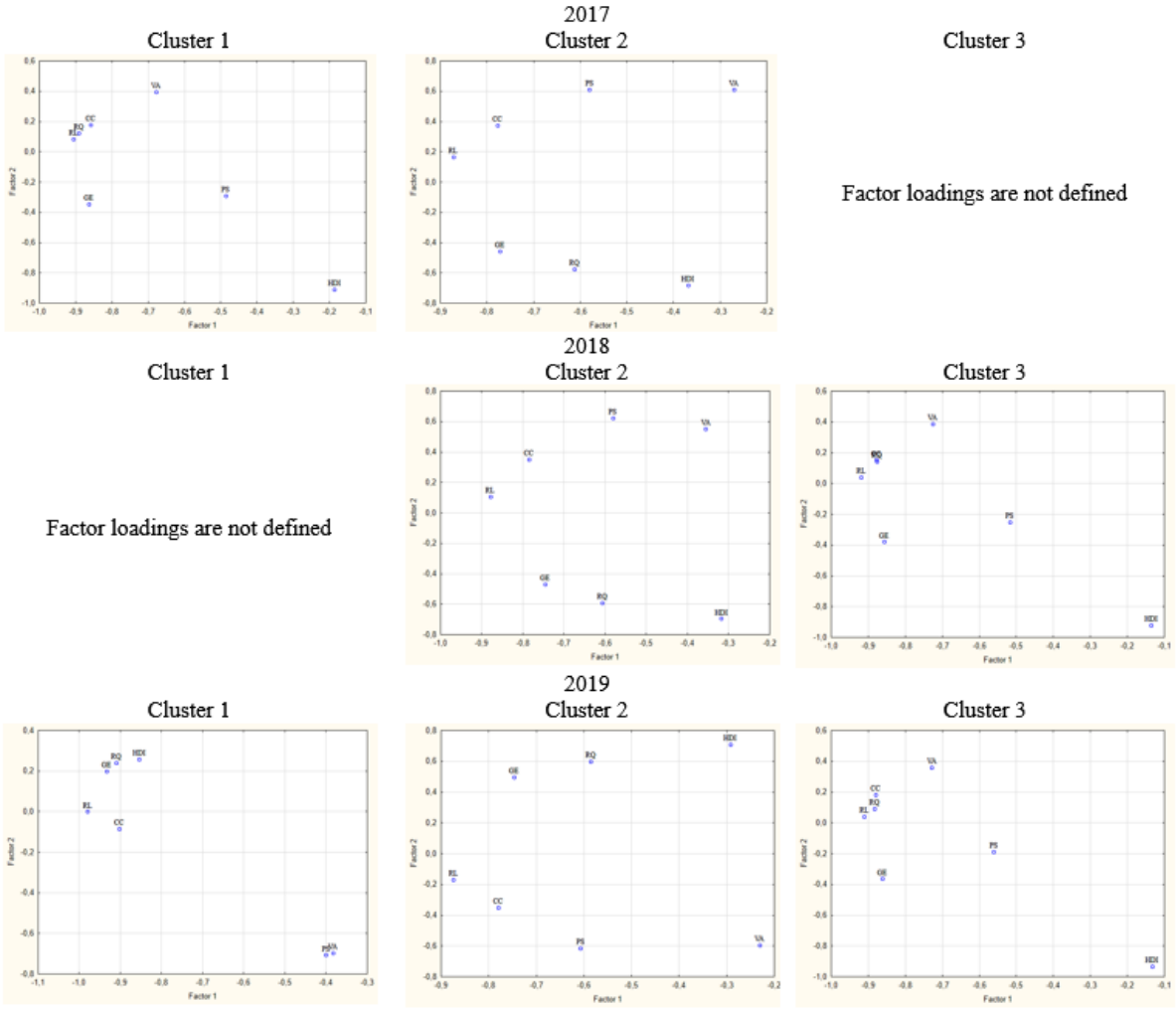
Variable	2017					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	-0,138323	0,917693	-0,188433	0,752401	-	-
VA	0,773673	-0,137380	0,611979	-0,267846	-	-
PS	0,356420	0,440572	0,840260	-0,058172	-	-
GE	0,692260	0,621386	0,259911	0,858844	-	-
RQ	0,880082	0,190728	0,064026	0,836460	-	-
CC	0,867341	0,128861	0,826851	0,247746	-	-
RL	0,879534	0,234264	0,755319	0,466307	-	-
Expl. Var	3,524367	1,549120	2,441904	2,357331	-	-
Prp. Totl	0,503481	0,221303	0,348843	0,336762	-	-
Variable	2018					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	-	-	-0,224957	0,730168	-0,110337	0,924410
VA	-	-	0,632641	-0,175152	0,802435	-0,184631
PS	-	-	0,849312	-0,079706	0,434265	0,376165
GE	-	-	0,246906	0,845308	0,728477	0,590185
RQ	-	-	0,059814	0,845365	0,883220	0,092386
CC	-	-	0,819993	0,260120	0,888289	0,082404
RL	-	-	0,727206	0,505431	0,897546	0,201040
Expl. Var	-	-	2,437928	2,322487	3,750065	1,434184
Prp. Totl	-	-	0,348275	0,331784	0,535724	0,204883
Variable	2019					
	Cluster 1		Cluster 2		Cluster 3	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
HDI	0,891203	0,047751	-0,214373	0,738010	-0,039065	0,941770
VA	0,124930	0,784716	0,550621	-0,320451	0,781812	-0,221425
PS	0,136383	0,800430	0,858108	-0,102260	0,517613	0,286686
GE	0,945855	0,129887	0,273890	0,854175	0,781044	0,514347
RQ	0,938446	0,082172	0,083719	0,834013	0,885521	0,071504
CC	0,820992	0,385297	0,827042	0,212481	0,899662	-0,020384
RL	0,921492	0,332649	0,788884	0,412626	0,903031	0,125400
Expl. Var	4,126949	1,541479	2,473850	2,298406	3,899714	1,303955
Prp. Totl	0,589564	0,220211	0,353407	0,328344	0,557102	0,186279

Source: *own compilation*

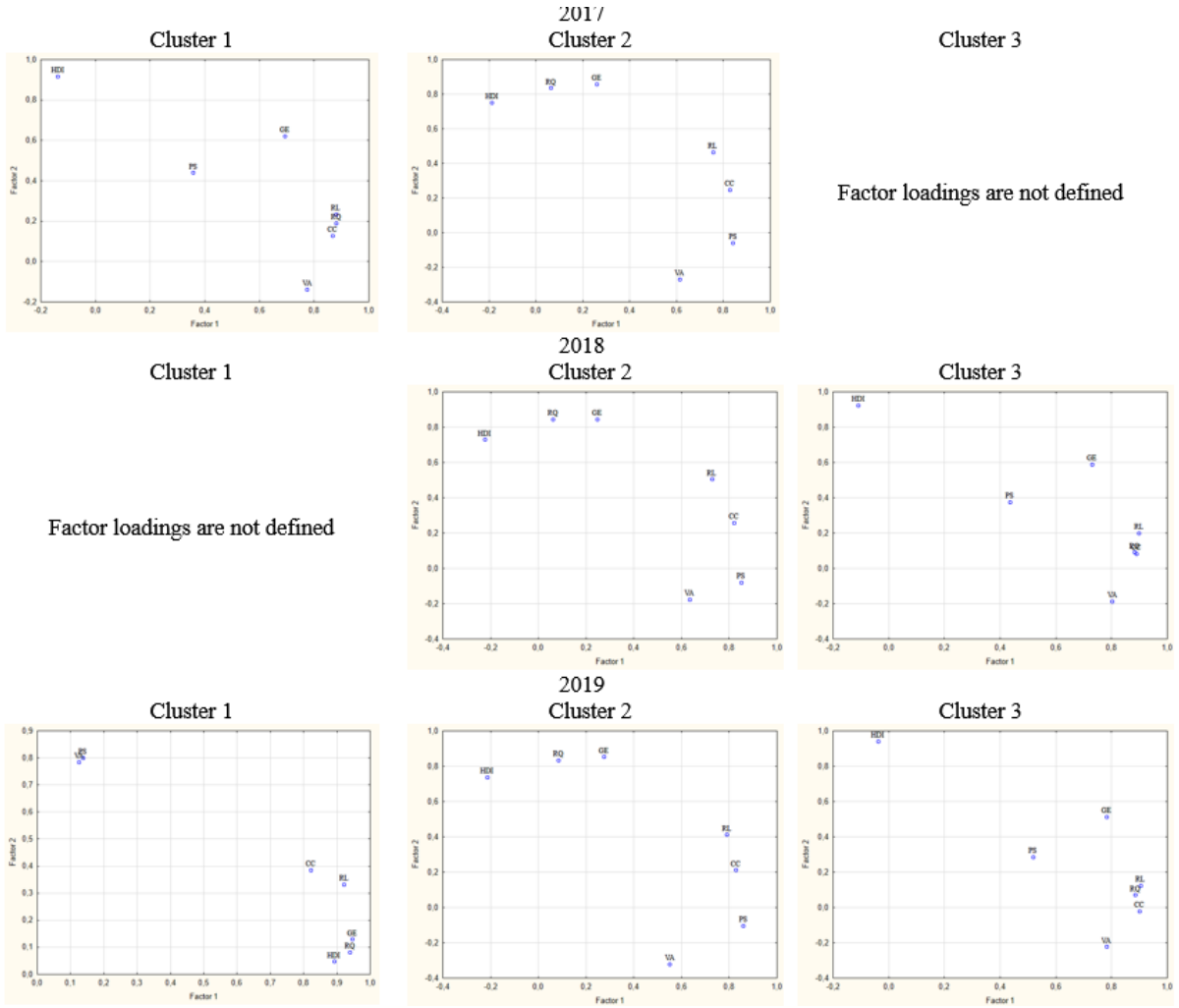
It follows from the data in the Tables that the first factor is more correlated with the variables than the second one for all clusters. At the same time, only one factor was distinguished in two clusters; for the same clusters, when using the Varimax rotation method, the factors were not distinguished at all. From the data in the Tables, we can conclude that the variables GE, CC and RL form a factor loading for all clusters during the analyzed period. The variable RQ takes part in the formation of the factor loading for clusters with large and small values of variables. The rotation of the axes using the Varimax method did not bring significant results in the interpretation of factor loadings. However, in both cases, we can state that the degree of influence of variables for each cluster on the sample is different, i.e. each cluster has its own internal regularities, and they are quite stable with respect to the time for a given period of analysis.

Visual representation of factor loadings for each cluster is presented in *Graph 12* and *Graph 13* without rotation and with rotation of the axes using the Varimax method respectively.

The graphs presented in these figures also show that the clusters differ in the degree of influence of variables, and this influence is quite stable over three years.



Graph 12. Factor Loadings (Factor rotation: Unroteted, Extraction: Principal components)



Graph 13. Factor Loadings (Factor rotation: Varimax normalized, Extraction: Principal components)

This means that improving the quality of governance will increase the level of human development. This is explained by the fact that under favorable institutional conditions there are more opportunities for human development. The realization of this approach will allow us to identify dependencies by groups and identify the most influential institutions for each group.

Conclusion

The article analyzes the relationship between human development and the institutional environment. HDI and WGI were used as indicators. The panel sample includes 188 countries for which comparable data are available from 2017 to 2019. As a result of applying the cluster analysis procedure, it was revealed that the countries form three groups. At the same time, the values of variables in each cluster differ significantly. The Kendall and Spearman correlation coefficients were calculated for each cluster in the study.

Factor analysis of the data in each of the three clusters showed that GE, CC and RL indicators form a factor loading for all clusters. RQ exerts factor loading in groups with high and low values of the variables.

In the course of the study, it was revealed that the relationship between institutional environment and human development is a direct positive one. Moreover, a stronger relationship

between human development and the institutional environment is observed in the group of countries with higher values of the analyzed indicators. The conclusions of this study are consistent with the results of previous studies and point to the importance of the institutional environment in the realization of development goals.

Discussion

The role of the institutional environment in ensuring human development is great. Institutions guarantee the stability of human interaction and make behavior predictable. The standards of behavior accepted in society in the form of generally recognized norms and rules simplify interaction, thereby reducing the level of transaction costs in society. However, a well-established institutional structure can hinder development by hindering the introduction of institutional innovations.

It should be noted that many institutions are difficult to change in the short term. This applies primarily to informal norms that evolved and were introduced into the standards of behavior gradually. Such norms are established over a long period of time through the adoption of the rules of established interactions in society. However, formal norms can be changed within a relatively short period by changing the regulatory and legislative framework, which makes it possible to introduce, improve, transplant and consolidate formal institutions.

The problems of formation of institutional environment are of great importance, both for human development and for economic development. And if limiting norms directly influence the development processes in society, then encouraging and stimulating norms, including informal ones, influence both directly and indirectly. At the same time, indirect influence can often have a long-term and stable character, forming certain stable types of behavior of community members.

Thus, in order to be able to influence the development of society in various aspects, the state must, first of all, create and improve state institutions that are part and formal basis of the institutional system of society.

Recommendations

As the analysis showed, a high level of human development is achieved in those countries in which there is a favorable institutional environment. Therefore, for the successful realization of development goals, it is not enough only to secure financing. The conditions under which these goals are realized also matter. A high level of corruption, distrust of the current government, unstable political situation, absence of a clearly substantiated economic policy, uncertainty about the future, etc. impede development in all its manifestations. In this regard, the institutional design of development in a broad sense should be given close attention by the government and the public, since effective institutions act as a kind of catalyst for development processes.

References

Ahmad, Z., & Saleem, A. (2014). Impact of Governance on Human Development. *Pakistan Journal of Commerce and Social Sciences*, 8(3), 612-628.

Akimov, O. O., Karpa, M. I., Parkhomenko-Kutsevil, O., Kupriichuk, V., & Omarov, A. (2021). Entrepreneurship education of the formation of the e-commerce managers professional qualities. *International Journal of Entrepreneurship, 25* (7), 1-8.

Al-Naser, M., & Hamdan, A. (2021). The impact of public governance on the economic growth: Evidence from gulf cooperation council countries. *Economics and Sociology, 14*(2), 85-110. https://doi.org/10.14254/2071-789X.2021/14-2/5

Cárcaba, A., González, E., Ventura, J. and Arrondo, R. (2017). How Does Good Governance Relate to Quality of Life? *Sustainability*, 9(4),. 1-16. https://doi.org/10.3390/su9040631

De Muro, P., & Tridico, P. (2008). The Role of Institutions for Human Development. Paper presented at the HDCA Conference, New Delhi, September. Retrieved from https://www.researchgate.net/publication/228430665

Gerring, J., Thacker, S. C. (2002). Political Institutions and Human Development. Retrieved from https://www.bu.edu/sthacker/files/2012/01/Political-Institutions-and-Human-Development.pdf

Hysa, E., & Çela, A. (2019). Relationship between Governance and Human Development in European Countries: Panel Regression Analysis. The 2019 IAI Academic Conference Proceedings, Rome, Italy. URL: https://www.academia.edu/42241306/Relationship_between_Governance_and_Human_Development_in_European_Countries_Panel_Regression_Analysis

Jankauskas, V. and Šeputienė, J. (2009). The impact of the institutional environment on the economic development. *Ekonomika*, 870, 141-153. https://doi.org/10.15388/Ekon.2009.0.1040

Justus, B. and Uma, A. D. (2016). Governance and Human Development in Gulu District: A Case Study of Gulu Municipality. *Open Journal of Business and Management*, 4, 361-375. https://doi.org/10.4236/ojbm.2016.42039

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. World Bank Policy Research Working Paper No. 5430.

Keser, A., & Gökmen, Y. (2017). Governance and Human Development: The Impacts of Governance Indicators on Human Development. *Journal of Public Administration and Governance*, 8(1), pp. 26-39.

Kryshtanovych, M., Akimova, L., Akimov, O., Parkhomenko-Kutsevil, O., & Omarov, A. (2022). Features of creative burnout among educational workers in public administration system. *Creativity Studies*, *15*(1), 116-129.

Leal Rodríguez, A. L., & Sanchís Pedregosa, C. (2019). Could the Ease of Doing Business be considered a predictor of countries' Socio-Economic Wealth? An empirical analysis using PLS-SEM. *Journal of International Studies, 12*(4), 229-243. https://doi.org/10.14254/2071- 8330.2019/12-4/15

Liotti, G., Musell,a M., D'Isanto, F. (2018). Does democracy improve human development? Evidence from former socialist countries. *Eastern Journal of European Studies*, Vol. 9(2), pp. 69-88.

Mishchuk, H., Yurchyk, H., & Bilan, Y. (2018). Shadow incomes and real inequality within the framework of leadership and social change. In *Leadership for the Future Sustainable Development of Business and Education* (pp. 89-101). Springer, Cham. https://doi.org/10.1007/978-3-319-74216-8_10

Nandha, M. and Smyth, R. (2013). Quality of Governance and Human Development. *Technical Report in SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2360898

Naomi, P., & Akbar, I. (2021). Beyond sustainability: Empirical evidence from OECD countries on the connection among natural resources, ESG performances, and economic development. *Economics and Sociology*, *14*(4), 89-106. https://doi.org/10.14254/2071-789X.2021/14-4/5

Navickas, M., Juščius, V., & Rabe, M. (2020). Shadow economy interconnection with maritime sector development in coastal European countries. *Journal of International Studies, 13*(3), 309-319. https://doi.org/10.14254/2071-8330.2020/13-3/20

Oliinyk, O. O. (2020). Social responsibility assessment in the field of employment (case study of manufacturing). *Scientific Bulletin of National Mining University*, (3), 131–136. https://doi.org/10.33271/nvngu/2020-3/131

Oláh, J., Hidayat, Y., Dacko-Pikiewicz, Z., Morshadul Hasan, M., Popp, J. (2021). Inter-Organizational Trust on Financial Performance: Proposing Innovation as a Mediating Variable to Sustain in a Disruptive Era. *Sustainability*, 13(17), 9947, 1-19. https://doi.org/10.3390/su13179947

Ottervik, M. (2011). Good Governance and Human Development: The Case of China and India. Paper STVK01, Department of Political Science, Lund University.

Pande, R. and Udry, C. (2005). Institutions and Development: A View from Below. Economic Growth Center, Yale University. Discussion Paper No. 928, Available at SSRN: https://ssrn.com/abstract=864044

Podhorecka, M., Andrzejczak, J., Szrajber, R., Lacko, J., & Lipiński, P. (2021). Virtual reality-based cognitive stimulation using GRYDSEN software as a means to prevent age-related cognitive-mobility disorders – a pilot observational study. *Human Technology*, *17*(3), 321–335. https://doi.org/10.14254/1795-6889.2021.17-3.7

Pradhan, R. P. and Sanyal, G. S. (2011). Good governance and human development: Evidence form Indian. *States Journal of Social and Development Science*, 1(1), 1-8.

Samoliuk, N., Bilan, Y., & Mishchuk, H. (2021). Vocational training costs and economic benefits: exploring the interactions. *Journal of Business Economics and Management. 22*(6), 1476-1491. https://doi.org/10.3846/jbem.2021.15571

Tsegaw, P. C., Drive, H. (2020). The Nexus Between Good Governance Indicators And Human Development Index In Africa: An Econometric Analysis. *Journal of Public Administration and Governance*,10(2), DOI: https://doi.org/10.5296/jpag.v10i2.16598

Türen, U. Gökmen, Y. Keser, A. (2016). National ICT, Economic Freedom And Human Development: A Cross Country Dynamic Panel Data Analysis. *Journal of Arts, Science Commerce*, 7(2), 1-14.

Ulas, E., Keskin, B. (2017). Is There a Relation Between HDI and Economic Performances?. In: Procházka D. (eds) New Trends in Finance and Accounting. Springer Proceedings in Business and Economics. Springer, Cham. https://doi.org/10.1007/978-3-319-49559-0_6

Wojciechowski, A., Wiśniewska, A., Pyszora, A., Liberacka-Dwojak, M., & Juszczyk, K. (2021). Virtual reality immersive environments for motor and cognitive training of elderly people – a scoping review. *Human Technology*, *17*(2), 145-163. https://doi.org/10.14254/1795-6889.2021.17-2.4

Wang, C., Zhang, B., Oláh, J. &Hasan, M. (2021). Factors Influencing the Quality of Life of Empty Nesters: Empirical Evidence from Southwest China. *Sustainability*, *13*(5), 2662.

Appendix

Table 2. Distribution of countries by cluster *

№	Country	2017	2018	2019	№	Country	2017	2018	2019
		cluster					cluster		
1	Afghanistan	1	3	3	95	Lebanon	1	3	3
2	Albania	2	2	2	96	Lesotho	2	3	3
3	Algeria	1	3	3	97	Liberia	1	3	3
4	Angola	1	3	3	98	Libya	1	3	3
5	Antigua and Barbuda	2	2	2	99	Liechtenstein	3	1	1
6	Argentina	2	2	2	100	Lithuania	3	1	1
7	Armenia	2	2	2	101	Luxembourg	3	1	1
8	Australia	3	1	1	102	Madagascar	1	3	3
9	Austria	3	1	1	103	Malawi	1	3	3
10	Azerbaijan	1	3	3	104	Malaysia	2	2	2
11	Bahamas	2	2	2	105	Maldives	2	2	2
12	Bahrain	2	2	2	106	Mali	1	3	3
13	Bangladesh	1	3	3	107	Malta	3	1	1
14	Barbados	3	1	1	108	Marshall Islands	2	2	2
15	Belarus	2	2	2	109	Mauritania	1	3	3
16	Belgium	3	1	1	110	Mauritius	3	1	1
17	Belize	2	2	2	111	Mexico	2	2	2
18	Benin	2	2	3	112	Micronesia, Fed. Sts.	2	2	2
19	Bhutan	2	2	2	113	Moldova	2	2	2
20	Bolivia	1	2	3	114	Mongolia	2	2	2
21	Bosnia and Herzegovina	2	2	2	115	Montenegro	2	2	2
22	Botswana	2	2	2	116	Morocco	2	2	2
23	Brazil	2	2	2	117	Mozambique	1	3	3
24	Brunei Darussalam	2	1	2	118	Myanmar	1	3	3
25	Bulgaria	2	2	2	119	Namibia	2	2	2
26	Burkina Faso	1	3	3	120	Nepal	1	3	3
27	Burundi	1	3	3	121	Netherlands	3	1	1
28	Cabo Verde	2	2	2	122	New Zealand	3	1	1
29	Cambodia	1	3	3	123	Nicaragua	1	3	3
30	Cameroon	1	3	3	124	Niger	1	3	3
31	Canada	3	1	1	125	Nigeria	1	3	3
32	Central African Republic	1	3	3	126	North Macedonia	2	2	2
33	Chad	1	3	3	127	Norway	3	1	1
34	Chile	3	1	1	128	Oman	2	2	2
35	China	2	2	2	129	Pakistan	1	3	3
36	Colombia	2	2	2	130	Palau	2	2	2
37	Comoros	1	3	3	131	Palestine, State of	1	3	3
38	Congo, Dem. Rep.	1	3	3	132	Panama	2	2	2
39	Congo, Rep.	1	3	3	133	Papua New Guinea	1	3	3
40	Costa Rica	2	2	2	134	Paraguay	2	2	2
41	Côte d'Ivoire	1	3	3	135	Peru	2	2	2
42	Croatia	2	2	2	136	Philippines	2	2	2
43	Cuba	2	2	2	137	Poland	3	1	1
44	Cyprus	3	1	1	138	Portugal	3	1	1
45	Czechia	3	1	1	139	Qatar	2	2	2
46	Denmark	3	1	1	140	Romania	2	2	2
47	Djibouti	1	3	3	141	Russian Federation	2	2	2
48	Dominica	2	2	2	142	Rwanda	2	2	2
49	Dominican Republic	2	2	2	143	Samoa	2	2	2
50	Ecuador	2	2	2	144	Sao Tome and Principe	2	2	2
51	Egypt	1	3	3	145	Saudi Arabia	2	2	2

52	El Salvador	2	2	2	146	Senegal	2	2	2
53	Equatorial Guinea	1	3	3	147	Serbia	2	2	2
54	Eritrea	1	3	3	148	Seychelles	2	2	2
55	Estonia	3	1	1	149	Sierra Leone	1	3	3
56	Eswatini	1	3	3	150	Singapore	3	1	1
57	Ethiopia	1	3	3	151	Slovakia	3	1	1
58	Fiji	2	2	2	152	Slovenia	3	1	1
59	Finland	3	1	1	153	Solomon Islands	2	2	2
60	France	3	1	1	154	South Africa	2	2	2
61	Gabon	1	3	3	155	South Sudan	1	3	3
62	Gambia	1	3	3	156	Spain	3	1	1
63	Georgia	2	2	2	157	Sri Lanka	2	2	2
64	Germany	3	1	1	158	St. Kitts and Nevis	2	2	2
65	Ghana	2	2	2	159	St. Lucia	2	2	2
66	Greece	2	2	2	160	St. Vincent and the Grenadines	2	2	2
67	Grenada	2	2	2	161	Sudan	1	3	3
68	Guatemala	1	3	3	162	Suriname	2	2	2
69	Guinea	1	3	3	163	Sweden	3	1	1
70	Guinea-Bissau	1	3	3	164	Switzerland	3	1	1
71	Guyana	2	2	2	165	Syrian Arab Republic	1	3	3
72	Haiti	1	3	3	166	Tajikistan	1	3	3
73	Honduras	1	3	3	167	Tanzania	1	3	3
74	Hong Kong, China	3	1	1	168	Thailand	2	2	2
75	Hungary	2	2	2	169	Timor-Leste	1	3	3
76	Iceland	3	1	1	170	Togo	1	3	3
77	India	2	2	2	171	Tonga	2	2	2
78	Indonesia	2	2	2	172	Trinidad and Tobago	2	2	2
79	Iran, Islamic Rep.	1	3	3	173	Tunisia	2	2	2
80	Iraq	1	3	3	174	Turkey	2	2	2
81	Ireland	3	1	1	175	Turkmenistan	1	3	3
82	Israel	3	1	1	176	Uganda	1	3	3
83	Italy	2	2	2	177	Ukraine	1	3	3
84	Jamaica	2	2	2	178	United Arab Emirates	3	1	1
85	Japan	3	1	1	179	United Kingdom	3	1	1
86	Jordan	2	2	2	180	United States	3	1	1
87	Kazakhstan	2	2	2	181	Uruguay	3	1	1
88	Kenya	1	3	3	182	Uzbekistan	1	3	3
89	Kiribati	2	2	2	183	Vanuatu	2	2	2
90	Korea, Rep.	3	1	1	184	Venezuela, RB	1	3	3
91	Kuwait	2	2	2	185	Vietnam	2	2	2
92	Kyrgyzstan	1	3	3	186	Yemen	1	3	3
93	Lao PDR	1	3	3	187	Zambia	2	2	3
94	Latvia	3	1	1	188	Zimbabwe	1	3	3

Source: *own compilation*

* Note: as a result of the analysis of data for 2017, the countries with the highest values of indicators were distributed to Cluster 1, and with the lowest - to Cluster 3 (Graph 5). In 2018 and 2019, countries with the highest values of the indicators were distributed to Cluster 3, and with the lowest - to Cluster 1 (Graph 6, 7). Therefore, Cluster 1 in 2017 corresponds to Cluster 3 in 2018 and 2019, and Cluster 3 in 2017 corresponds to Cluster 1.