

Progressive Method For Assessing the Component Harmonization of the Countries` Development

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Abstract: The study objective is to propose a progressive method of component harmonization of countries` development applying quantitative and qualitative indicators. The practical application of the harmonization method is considered on the basis of three global indicators: the human development index, the happiness (life satisfaction) index and the ecological efficiency index.

The composite development index has been calculated on the basis of the named international indicators applying the standardization method to bring indicators to a single measure, and a multiplicative model which advantage is the possibility of simultaneous consideration and harmonization of low and high values. Calculations have been made for 25 countries. Calculations have been made by three methods of harmonization between integrated development index`s components: the Golden Ratio. The harmonization methods have been applied as the case of Estonia, the EU country, which showed the highest growth of the composite development index (+0,023) and, the EU country, with the lowest growth (+0,01) during 2019-2020s.

Based on the Golden Ratio, the differences and lack of interaction between the development components like human development, life satisfaction and environmental efficiency in EU countries during 2019-2020s, as well as their quantitative analysis, have been figured out. Application of the proposed toolkit to study the level of composite development at the EU countries has confirmed the disharmony with the predominance of the human development index. The practical application of the "equilibrium triangle" model to the harmonization of a country's composite development components, has allowed to state that the distances (sides of a triangle)

"human development-happiness" and "human development-ecological efficiency" components should be equal. In case of equilateral triangle, the equality of indices meets all distances: "human development-happiness", "human development-ecological efficiency" and "happiness-ecological efficiency".

The proposed progressive method of harmonization is universal, because it allows expanding the number of indicators to determine the composite development and use other international indicators determined by the objective of the study. If more than three indicators are applied, then the geometric interpretation of the harmonization will be a regular N angle.

Keywords. Harmonization, human development, life satisfaction, ecological efficiency, composite development, Golden Ratio method, equilibrium triangle and equilateral triangle method.

INTRODUCTION

Harmonization is an important step towards implementing the concept of sustainable composite development at the national, regional and local levels amid economic instability, since sustainable development builds foundations for the future generations, makes it possible to develop harmoniously at the present stage and offsets the discord of previous development. Inconsistency of economic development and environmental standards, dominance of industries with high share of resource and energy-intensive outdated technologies, raw material-biased exports, as well as low level of labour culture and consumption led to crisis changes in nature, which negatively affected national, regional, urban and individual wellbeing.

Nowadays there is a need to harmonize the environmental, economic and social sustainable development components and to determine the nature of correlation "society – nature", which ensures the equal access to the resources of present and future generations. "Society - Economy" requires balanced income distribution and overcoming poverty. "Nature-economy" is not less important as it needs cost assessment of man-made environmental impacts. A harmonious combination of "nature-economy-society" is the key challenge of times, both at interethnic, regional and local levels.

In this regard, there is a need to develop a scientific approach to the component harmonization of sustainable development, which affects not only the level of economic well-being, but also the society`s welfare in general and build the background for the development of future generations.

From the aforementioned one we can conclude that the main task for each country is not only the attraction of as much resources as possible and their rational use but also harmonized balance between them.

Thus, setting harmonization between development components is a priority task at national, regional and local levels.

THEORETICAL FRAMEWORK

To determine the methods for assessing the degree of harmonization and instruments for improving its level, it is advisable to consider the theoretical achievements regarding the concept of "harmonization". The term "harmonization" is a derivative of "harmony", which being translated from the ancient Greek, means consistency, coherence and relation, that is, internal and external orderliness and integrity of phenomena and processes. In a broad sense, harmony is a generalization of the composition laws, in a narrower – the rules of building and coordination of elements. Besides, harmony is organization of form`s or environment`s elements, which excellence is achieved in terms of aesthetic norms for this style or national region. Harmony involves the consistency that meets the laws of expediency, optimality and beauty. It is their organic unity. That is, it establishes the pattern of the elements` internal connections and reveals general logic of development, the unity of the form and content and captures the most characteristic features of a style, the highest stage of its development.

Moreover, it is possible to interpret the concept of "harmonization" as related to the concept of "harmony" as a device and ordering, that is, the activity aimed at overcoming the disorder and meeting the coherence and the union of something been "torn".

The correlation of society and nature considers the strategy of harmonization as a desire to better coordinate two dependencies – human being from nature and nature from human being. Harmonization of the relationship between society and nature can be carried out as a result of the transformation of environmental consciousness and activities when humanity, deliberately recognizing the priority of the

laws of nature, will take on the functions of a saver for the rapid and complete harmonization of the relationship between society and nature.

The concept of the "coexistence harmony of a society and nature" highlights a peculiar ideal of their coexistence and development that is a relatively dynamic equilibrium of all their most important trends of interaction or balanced processes of social consumption and natural resources` restoration. The ideal`s achievement is preceded by a high optimality of relations between society and nature. This means that at each stage of a society and nature interaction seeks for a more or less harmonious ratio of social and environmental purposes and needs, the choice of optimal and balanced goals by the laws of nature functioning and social development. For this reason, one should set the environmental limits of human activity which can provide a dynamic equilibrium of general consumption processes and natural resources restoration. Further progress in the development of civilization is impossible without them.

Consequently, harmonization is a mutual agreement, linking into a single system, unification, coordination, ordering and ensuring mutual compliance of economic measures between systems and subsystems, structure and infrastructure of a country.

In the study, harmonization means balancing between human development, life satisfaction and ecological efficiency. Therefore, we will focus on the theoretical and practical achievements regarding these components.

The need to supplement the human development index by an additional indicator of sustainability was substantiated by (Gruzina, Y., Firsova, I., Strikellkowski, W. 2021). Scholars proposed to introduce a concept of sustainable human development index (SHDI), which fully defines country`s potential but does not emphasize the achieved result. The need to improve human development by expanding its content was substantiated by (Prados de la Escosura, Leandro 2021). Scientists proposed an augmented human development index (AHDI), which combines achievements in the field of health, education, material standard of living and political freedom. Continuing the subjects, the scholars (Mangaraj, B.K.; Aparajita, Upali, 2020) reviewed the concept of building a human development index by proposing a relative GHDI index relative to the basic HD level, which depends on the year, and is calculated based on the objectives of human development indicators established by the United Nations Development Programme, that is the individual results of all the studied countries. The studies also revealed that calculations of HDI indicators have certain disadvantages, such as methodology, selection of indexes and measurements (Omran, Hashem; Alizadeh, Arash; Amini, Mohaddeseh, 2020).

The paper proposes a new approach to calculating scores of the human development index. First, new and additional criteria are being selected in each index of health, education and standard of life, then the specific scales of criteria are being determined in each measurement. Scientists (Van Puyenbroeck, Tom; Rogge, Nicky 2020) also emphasized

disadvantages of the index calculation methodology. Scientists (Kawada, Yoko; Nakamura, Yuta; Otani, Shuhei, 2019) proposed a new formula for calculating HDI. Methods of optimization and improvement of the human development index, which is an integral part of the countries' ranking in terms of their socio-economic development, were studied by (Kuc-Czarnecka, Marta, 2019). The optimization of the progressive development will be carried out by re-scaling the current specific scales so that they highlight the real effect of each component, taken into account in the process of the HDI calculation. To solve the problems of calculating scientists (Qiu, Qihua; Sung, Jaesang; Davis, Will, 2018) proposed to evaluate human development through three auxiliary variables that determine the situation with the environment, stability and incomes; besides, the index includes the Millennium Development Goals. There is a point of view among scholars that the main reason for the low level of human development is poverty (Hasan, Zubair, 2020).

A significant number of studies is devoted to human development analysis in the EU countries. The interconnection between economic diversification and human development in the EU countries was investigated by Ali, Muhammad; Cantner, Uwe (Ali, Muhammad; Cantner, Uwe 2020). A two-dimensional relationship between human development and economic freedom indexes in European countries was proved by (Gezer, Alper 2020). Analysis of the relationship between human development index (HDI) and the Corruption Perception Index (CPI) was made by (Sarabia, Maria; Crecente, Fernando; Teresa del Val, Maria, 2019). Studying the determinants of socio-economic development of the EU member states scientists (Babiarz, Patryk; Grabinski, Tadeusz; Migala-Warchol, Aldona, 2018) proposed a structure, modeled by human development index, which takes into account a wide set of variables covering economic outcomes, science and technology, healthcare, education and living conditions.

Let us consider the results of theoretical and practical studies of life satisfaction (human happiness index), which is the second component of composite development of our progressive method. It was proposed by (Choudhury, M., 2019) to consider the human happiness index as an alternative to the development assessment. Human development involves not only health care, formal education and economic growth, as indicated by the UNDP index. For example, the study of (Pugno, M., 2019) proposed broader interpretation of the concept of "human development": growth of personal human skills interacting within social and economic context making people the agents of their own lives, that is happy, or satisfied. In the study of human welfare and progress (Pugno, M., 2015) two different approaches were highlighted, but it seems they have opposite prospects and even opposing weaknesses. The approach to the abilities proposed by A. Sen, focuses on objective factors that contribute to the person's well-being. Besides, scientists (Capps, D., Carlin, N., 2013) proved the existence of empirical correlation between happiness and the level of economic development, as well as between happiness and the level of democracy in a society.

DATA AND METHODS

Let us consider the practical application of the harmonization methods on the basis of a composite indicator, which consists of three sub-indexes: the human development index (I_{HD}), the human happiness index or life satisfaction (I_{HAP}) and the ecological efficiency index (I_{EP}).

Let us study the components of the composite development index of the EU countries during 2019-2020s (Table 1).

Table: Components of the composite development index of the EU countries during 2019-2020s

№	Country	The components of index complex development (I_{CD}), роки					
		2019			2020		
		I_{HD}	I_{HAP}	I_{EP}	I_{HD}	I_{HAP}	I_{EP}
1	Austria	0,921	7,294	79,0	0,922	7,213	79,6
2	Belgium	0,930	6,864	77,4	0,931	6,839	73,3
3	Bulgaria	0,813	5,102	67,9	0,816	5,598	57,0
4	Great Britain	0,928	7,165	79,9	0,932	6,798	81,3
5	Hungary	0,850	6,000	65,0	0,854	6,038	63,7
6	Germany	0,946	7,076	78,4	0,947	7,312	77,2
7	Greece	0,881	5,515	73,6	0,888	5,788	69,1
8	Denmark	0,939	7,646	81,6	0,940	7,515	82,5
9	Ireland	0,951	7,094	78,8	0,955	7,035	72,8
10	Spain	0,905	6,401	78,4	0,904	6,502	74,3
11	Italy	0,890	6,387	77,0	0,892	6,488	71,0
12	Latvia	0,863	5,950	66,1	0,866	6,229	61,6
13	Lithuania	0,876	6,215	69,3	0,882	6,391	62,9
14	Luxemburg	0,913	7,305	79,1	0,916	7,324	82,3

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15	Netherland	0,942	7,449	75,5	0,944	7,504	75,3
16	Poland	0,877	6,186	64,1	0,880	6,139	60,9
17	Portugal	0,860	5,911	71,9	0,864	5,768	67,0
18	Romania	0,823	6,112	64,8	0,828	6,140	64,7
19	Slovenia	0,912	6,363	67,6	0,917	6,462	72,0
20	Finland	0,937	7,809	78,6	0,938	7,889	79,8
21	France	0,898	6,664	84,0	0,901	6,714	80,0
22	Croatia	0,848	5,505	65,5	0,851	6,508	63,1
23	the Czech Republic	0,898	6,911	67,7	0,900	6,897	71,1
24	Sweden	0,943	7,354	80,5	0,945	7,314	78,7
25	Estonia	0,889	6,022	64,3	0,900	6,453	65,3

Source: Human development index 2021. URL: <http://hdr.undp.org/sites/default/files/hdr2020.pdf>
 World Happiness Report 2021. URL: <https://happiness-report.s3.amazonaws.com/2021/WHR+21.pdf>
 2020 EPI REPORT. URL: <https://epi.yale.edu/downloads/epi2020report20210112.pdf>

In our opinion, if one analyzes each of the indicators separately, he/she will only get the outcomes of country's development in a certain aspect, which limits its future development. Therefore, it is important to consider all components simultaneously, indicating composite and multiple development. We propose to determine the general index as a set of three indicators: the human development index, the life satisfaction index ("human happiness") and the ecological efficiency index.
 To calculate the general index, it is necessary to bring indicators in accordance with each other by means of standardization. The index calculation procedure provides for statistical indicators` standardization, which is based on the formula:

$$I_z = \frac{I_{fact}}{I_{max}}, \quad (1)$$

where I_z – standardized index;

I_{fact} – real value of index;

I_{max} – maximum value of index (for the inclusive development index - 10; for the human happiness index - 10; for the ecological efficiency index - 100);

The standardization results of the composite development index`s components are presented in Table 2.

Tab. 2 Standardization of the composite development index`s components of the EU countries

№	Country	The normal components of index complex development (I_{CD}), роки					
		2019			2020		
		I_{HD}	I_{HAP}	I_{EP}	I_{HD}	I_{HAP}	I_{EP}
1	Austria	0,921	0,729	0,790	0,922	0,721	0,796
2	Belgium	0,930	0,686	0,774	0,931	0,684	0,733
3	Bulgaria	0,813	0,510	0,679	0,816	0,560	0,570
4	Great Britain	0,928	0,717	0,799	0,932	0,680	0,813
5	Hungary	0,850	0,600	0,650	0,854	0,604	0,637
6	Germany	0,946	0,708	0,784	0,947	0,731	0,772
7	Greece	0,881	0,552	0,736	0,888	0,579	0,691
8	Denmark	0,939	0,765	0,816	0,940	0,752	0,825
9	Ireland	0,951	0,709	0,788	0,955	0,704	0,728
10	Spain	0,905	0,640	0,784	0,904	0,650	0,743
11	Italy	0,890	0,639	0,770	0,892	0,649	0,710
12	Latvia	0,863	0,595	0,661	0,866	0,623	0,616
13	Lithuania	0,876	0,622	0,693	0,882	0,639	0,629
14	Luxemburg	0,913	0,731	0,791	0,916	0,732	0,823
15	Netherland	0,942	0,745	0,755	0,944	0,750	0,753
16	Poland	0,877	0,619	0,641	0,880	0,614	0,609
17	Portugal	0,860	0,591	0,719	0,864	0,577	0,670
18	Romania	0,823	0,611	0,648	0,828	0,614	0,647
19	Slovenia	0,912	0,636	0,676	0,917	0,646	0,720
20	Finland	0,937	0,781	0,786	0,938	0,789	0,798
21	France	0,898	0,666	0,840	0,901	0,671	0,800
22	Croatia	0,848	0,551	0,655	0,851	0,651	0,631
23	the Czech Republic	0,898	0,691	0,677	0,900	0,690	0,711

24	Sweden	0,943	0,735	0,805	0,945	0,731	0,787
25	Estonia	0,889	0,602	0,643	0,900	0,645	0,653

Source: calculated by authors themselves

Standardizing the values of the EU countries' composite development components, let us calculate the general index of composite development based on the multiplicative model, which involves all indicators together. The model is more "rigid", since it does not allow offsetting low values of indicators due to the indicators, which reflect higher level of development. In our opinion, one should use it when considering all the components, which determine country's quantitative and qualitative development.

Thus, the composite development index of a country by a multiplicative model is determined by the formula:

$$(1)$$

where I_{total} – the composite development index of a country;

I_{HD} – the human development index;

I_{HAP} – the life satisfaction index (“human happiness”);

I_{EP} – the ecological efficiency index.

The advantage of the multiplicative model is its ability to take into account and harmonize low and high values of indicators. It also indicates the degree of the estimated country's index compliance with the reality.

The calculation results of the composite development index are

presented in Table 3.

Tab. 3 The composite development index of the EU countries during 2019-2020s

№	Country	The index complex development (I_{CD}), роки		Характер змін
		2019	2020	
1	Austria	0,810	0,809	↓
2	Belgium	0,791	0,776	↓
3	Bulgaria	0,655	0,639	↓
4	Great Britain	0,810	0,802	↓
5	Hungary	0,692	0,690	↓
6	Germany	0,807	0,812	↑ (+0,05)
7	Greece	0,710	0,708	↓
8	Denmark	0,837	0,835	↓
9	Ireland	0,810	0,788	↓
10	Spain	0,769	0,759	↓
11	Italy	0,759	0,743	↓
12	Latvia	0,698	0,693	↓
13	Lithuania	0,723	0,708	↓
14	Luxemburg	0,808	0,820	↑ (+0,012)
15	Netherland	0,809	0,811	↑ (+0,02)
16	Poland	0,703	0,690	↓
17	Portugal	0,715	0,694	↓
18	Romania	0,688	0,690	↑ (0,02)
19	Slovenia	0,732	0,753	↑ (0,021)
20	Finland	0,832	0,839	↑ (0,07)
21	France	0,795	0,785	↓ (0,01)
22	Croatia	0,674	0,704	↑
23	the Czech Republic	0,749	0,761	↑ (0,012)
24	Sweden	0,823	0,816	↓
25	Estonia	0,701	0,724	↑ (0,023)

Source: calculated by authors themselves

Let us consider possible ways of their harmonization: 1) the "Golden Ratio", 2) the rule of "equilibrium triangle" and "equilateral triangle".

The harmonization method based on the "Golden Ratio", allows determining the degree of harmonization between composite development components applying quantitative analysis. It is well known that the "Golden Ratio" could be found both in nature and in artificial objects created by

humans. It is synonymous with harmony, which balances and reconciles the "boundaries" between the components. Scientists working in various fields associate the "Golden Ratio" with expediency, optimality and efficiency. As a rule, the "Golden Ratio" is characterized by its inherent minimum or maximum.

The geometric interpretation of the "Golden Ratio" can be represented by dividing a single segment into two parts, in

which the ratio of the lengths of the entire segment to its greater part is equal to the ratio of the greater part to the lesser. This ratio is equal to 1.618; while most of the segment will be equal to 0.618, and less – 0.382 (Fig. 1).

The above theoretical considerations could be applied to determine the level of harmonization between the composite development components. It is a necessary step to analyze the real values of the composite development index's components and its comparison with the harmonized status.



Fig. 1 The geometric interpretation of the "Golden Ratio"

Source: built by authors themselves

Let us consider this progressive method of harmonization on the example of Estonia (Fig. 2 a, b) – the EU country, which achieved the highest growth of the composite development index (+0.023) and France (Fig. 3 a, b) – the country with lowest growth (+0.01).

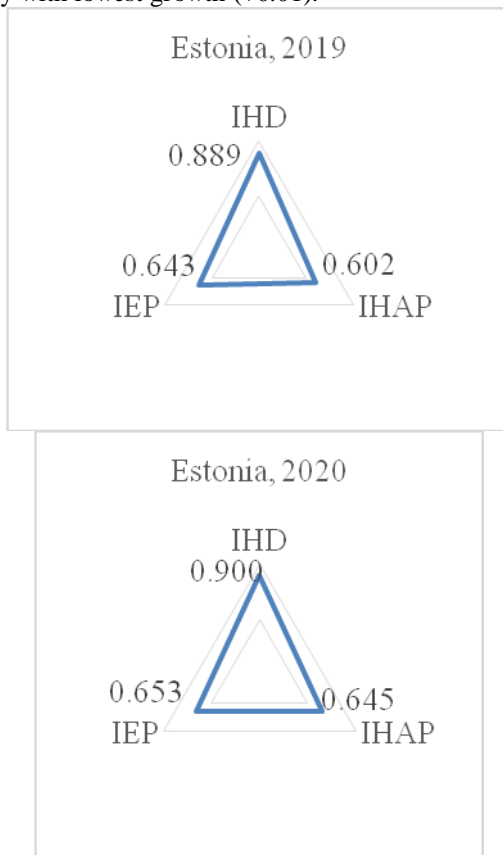


Fig. 2 Indices of composite development components in Estonia, 2019-2020s

Source: built by authors themselves

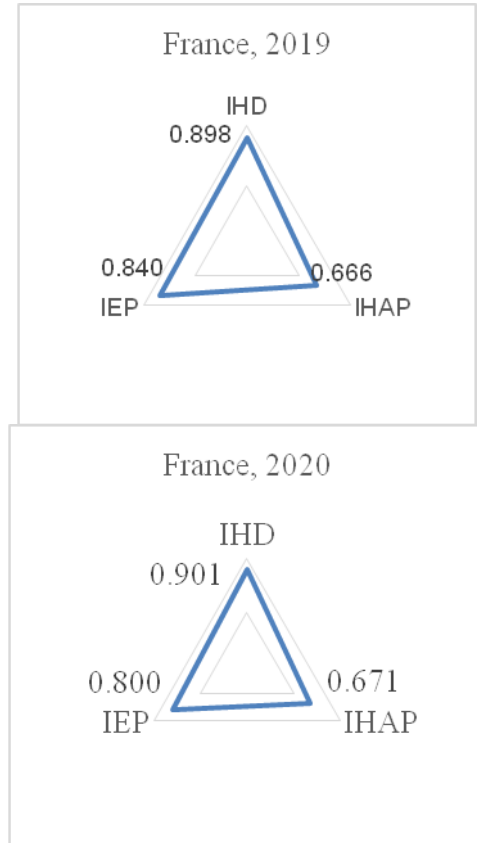


Fig. 3 Indices of composite development components in France, 2019-2020s

Source: built by authors themselves

Fig. 2 and fig. 3 reveal that the human development index was the most important in 2020 for Estonia and France – 0.900 and 0.901, respectively, while in 2019, France showed a better result than Estonia – 0.898 and 0.889, respectively. The human happiness index was least important in 2020 and 2019 for both countries. This allows us to conclude about the contribution of the relevant component to the overall level of composite development. Therefore, the obtained results indicate the lack of harmonization within the component structure of composite development and necessitate the search for ways to achieve a harmonious status.

As it has been noted above, one of the harmonization tools is the application of the "Golden Ratio". Practical implementation of the proposed tools is to determine the degree of harmonization between composite development components for Estonia and France (Table 4).

Tab. 4 Comparison of real and “harmonized” distribution between sub-indices of composite development

Country	Indicators	Real value, years		Ideal («harmonized») distribution, pcs	Deviation (+/-)	
		2019	2020		2019	2020
<i>Estonia</i>	I _{HD}	0,889	0,900	0,382	+0,507	+0,518
	I _{HAP}	0,602	0,645	0,237	+0,365	+0,408
	I _{EP}	0,643	0,653	0,381	+0,262	+0,272
<i>France</i>	I _{HD}	0,898	0,901	0,382	+0,516	+0,519
	I _{HAP}	0,666	0,671	0,237	+0,429	+0,434
	I _{EP}	0,840	0,800	0,381	+0,459	+0,419

Source: calculated by authors themselves

Based on the analysis of the real and "ideal" (harmonized) values of composite development sub-indexes (Table 4), it can be stated that all composite development components for Estonia and France in 2019 and 2020 exceeded the "harmonized" level. Note that in 2020 the excess of the ecological efficiency index for Estonia dropped compared to 2019, which indicates the need for applying measures for the ecological component balancing.

On the basis of the preliminary study, there is a need for analytical calculation of the sides of the triangle components – distances between composite development components

and the degree of harmonization. The distances between the two close points of the triangle are calculated by Formula 2:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad (2)$$

If *d* distance is equal for three sides, it indicates a significant level of harmonization between sub-indexes.

Let us make calculations based on the application of a progressive method on the example of Estonia and France (Table 5).

Tab. 5 Distances between triangle apexes referring to correlations of the composite development sub-indexes, 2019-2020s

country	Indicator	The composite development sub-indexes, years	
		2019	2020 p
<i>Estonia</i>	«I _{HD} ma I _{HAP} », <i>d</i> ₁	1,074	1,107
	«I _{HD} ma I _{EP} », <i>d</i> ₂	1,097	1,112
	«I _{HAP} ma I _{EP} », <i>d</i> ₃	0,881	0,918
<i>France</i>	«I _{HD} ma I _{HAP} », <i>d</i> ₁	1,118	1,123
	«I _{HD} ma I _{EP} », <i>d</i> ₂	1,230	1,205
	«I _{HAP} ma I _{EP} », <i>d</i> ₃	1,072	1,044

Source: calculated by authors themselves

Let us analyze the values of composite development components for Estonia and France, taking into account the equilibrium and equilateral triangle models. The distances «I_{HD} and I_{HAP}» and «I_{HD} and I_{EP}» must be equal according to the equilibrium triangle model. Estonian results reveal the growing distance between all indicators in 2020, while for France, only the distance for «I_{HD} and I_{HAP}» indicators rises in 2020. The calculations confirm our theoretical

substantiation for the disharmony between country’s composite development components by the equilateral triangle model, according to which all distances should be equal and form a third of the whole.

Within the rule of equilibrium and equilateral triangle one can define the "ideal" values of composite development components (Table 6 – Table 7).

Tab. 6 Real and “ideal” (harmonized) values of distances between composite development components for Estonia and France, 2019

Country	Distances	the rule of equilibrium triangle		the rule of equilateral triangle
		Real values	Ideal values	
Estonia	$\langle I_{HD} ma I_{HAP} \rangle$	0,889	0,746	0,711
	$\langle I_{HD} ma I_{EP} \rangle$	0,602	0,746	0,711
	$\langle I_{HAP} ma I_{EP} \rangle$	0,643	0,643	0,711
France	$\langle I_{HD} ma I_{HAP} \rangle$	0,898	0,782	0,801
	$\langle I_{HD} ma I_{EP} \rangle$	0,666	0,782	0,801
	$\langle I_{HAP} ma I_{EP} \rangle$	0,840	0,840	0,801

Source: calculated by authors themselves

Tab. 7 Real and “ideal” (harmonized) values of distances between composite development components for Estonia and France, 2020

Country	Distances	the rule of equilibrium triangle		the rule of equilateral triangle
		Real values	Ideal values	
Estonia	$\langle I_{HD} ma I_{HAP} \rangle$	0,900	0,776	0,733
	$\langle I_{HD} ma I_{EP} \rangle$	0,645	0,776	0,733
	$\langle I_{HAP} ma I_{EP} \rangle$	0,653	0,653	0,733
France	$\langle I_{HD} ma I_{HAP} \rangle$	0,901	0,786	0,791
	$\langle I_{HD} ma I_{EP} \rangle$	0,671	0,786	0,791
	$\langle I_{HAP} ma I_{EP} \rangle$	0,800	0,800	0,791

Source: calculated by authors themselves

Tables` 6 and 7 data analysis illustrates that in 2019, values of the distances between composite development components for both countries are higher according the equilibrium and equilateral triangle model compared to 2020. That is, their development is gradually approaching the calculated harmonized (“ideal”) status. Let us emphasize that the model selection, that is the “equilibrium triangle” model or the “equilateral triangle” model, is determined by the prior given strategic development guidelines. If the main goal is the equality between two components, then the level of development is determined by the “equilibrium triangle” model. Achieving equality between three components meets the “ideal” position of the “equilateral triangle” model.

CONCLUSIONS

On the basis of the study, it can be summed up that the main task is not to achieve the highest value of the component but in supporting the harmonized correlation between them determined by the correct geometric figure. Achieving this position is possible on the basis of mutual agreement policy, which would have contributed to a rational redistribution of tangible and intangible resources and, accordingly, the development harmonization from micro- to megalevel.

The component harmonization of composite development, which involves components` coherency and coordination acts as the necessary condition for the country's development amid uncertainty and stronger impact of global challenges.

The correlation must meet certain rules that determine the harmonization tools. In our opinion, one of the most effective instruments from the theoretical and practical points of view is harmonization based on the “Golden Ratio”, which allows not only to reveal the difference and lack of interaction between elements, but also to make quantitative analysis. The application of the proposed progressive method to study the level of composite development of the EU countries confirmed the disharmony with predominance of the human development index. This requires development of the appropriate harmonization mechanism based on resource redistribution to support one component at the proper level and other`s improvement.

Harmonization analysis allows us to conclude that the triad of composite development components can form an equilibrium or equilateral triangle. The practical application of the “equilibrium triangle” model to the harmonization of the country`s composite development components allows to state that the segments determining “human development-human happiness” and “human development-ecological efficiency” must be equal. In case of equilateral triangle, the equality characterizes all segments: “Human development-human happiness”, “human development-ecological efficiency”, and “human happiness-ecological efficiency”.

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