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QUALIMETRIC APPROACHES TO THE QUALITY OF HUMAN POTENTIAL IN UKRAINE

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INTRODUCTION

Globalisation, the acceleration of scientific and technological progress, increasing amounts of information and new business methods have caused profound changes in the economy. Quality is a sign of both static and dynamic economic phenomena and processes, and quality dimensions have become a key feature of the innovation economy in the 21st century, starting with the quality of conditions (resources, output and organisational production), and ending with the quality of processes (labour, economic growth, human development, human life).

Since ancient times, philosophy has referred to quality as the inherent and unique characteristics of existence [WWW 1]. The highest level of quality is an ideal model, to which development strives to attain, but never actually does. Today, in the social economy, the quality of human potential (HPQ) – a fundamental qualimetric indicator of the completeness with which all human needs are satisfied – is gaining wider and wider application. The quality of human potential is a polystructural phenomenon, a complex open system. Assessment of this quality has to take place at different levels of formation, taking into account the environmental conditions of human existence, and then be generalised. The goal of this article is to justify this thesis, highlighting specific approaches and levels of quality formation and analysing them at different levels, since overall assessment requires comprehensive and large-scale research.

Given the complexity and underdevelopment of methodological and methodical issues, and the absence of a single criterion for assessing the actual quality in the projection of human development, it is necessary to elaborate a set of instruments to study the quality of human potential in order to find ways for its preservation and accretion. That is the main purpose of this article.

THE AIM OF THE RESEARCH AND PROBLEMS IN THE METHODOLOGY TO APPROACHING QUALITY

The purpose and methods of the study are based on methodical and methodological qualimetric approaches to assessing the existing measure of human potential quality in Ukraine's regions. Theoretical studies of human potential vary significantly in terms of theoretical and methodological approaches to perception: political and economic, demographic and resource-based. A methodology for the comparative analysis of human development indicators in conjunction with the quality of life – ensuring that that quality is at a decent level – are reflected in the works of Pakistani scientist M. ul Haq [1995] and Indian scholar A. Sen [2009]. Their ideas became the theoretical and methodological basis for calculating the human development index (HDI).

Recent empirical studies of human resources have frequently assessed human capital, which embodies the use of human potential. A substantial study on measuring human capital was conducted by Polish scientists [Czajkowski 2012, Miciuła and Miciuła 2015]. They grouped methods of evaluating human capital by the cost of creating it, future profitability of capital and coverage by educational processes, among others.

In the context of human capital in the world economy, the works of R. Abdel-Khalik [2002], M. Dobija [1998] and G. Turner [1996] have been influential. They have all found that individual characteristics of quality human capital are correlated with companies profiting and increasing their market value. For evaluations of human capital in terms of its intellectual component, special attention should be paid to the following: Skandia Navigator [Bukowitz and Williams 2000], Monitor of intangible assets [Van Den Berg 2003], IVM method (comprehensive assessment) Tobin's Q Ratio [Bendikov and Dgamaj 2001], Index of intellectual capital (IC-index) [Liapina and Grygorieva 2003], the Ernst & Young consulting firm – Measures that Matter (with a certain reduction of indicators) [Nonaka and Takeuchi 1995], K.E. Sveiby's monitor of intellectual capital – Intangible Assets Monitor [Bukowitz and Williams 2000], Knowledge Quick Scan [Andrusenko 2004], Report of Saratog Institute [Fitzenz 2001]. Thus, methodical approaches to evaluating human capital have been sufficiently developed and have considerable weight, since they can be widely used in market management, especially at the micro level.

However, methodological assessments of human potential that reflect not only the use, but other stages of human resource circulation in the economy, are not as common. This is because a wide range of indicators must be used in assessments to ensure the objectivity of the results. There is therefore a need to structure the study levels and conduct analysis on each of them, and later to summarise results using an integral indicator.

Systematic studies of the actual quality of human potential as the object of economy are practically non-existent, though quality has not been omitted in various studies on the quality of life (J. Galbraith, D. Bell, W. Rostow, Z. Brzezinski), quality of production process management (W. Shuhart, K. Ishikawa, H. Taguchi, E. Deming, P.Yu. Belenky), and an innovative component of human resource quality (L.K. Semiv, J.M. Juran and F.M. Gryna), among others. In fact, according to some researchers, quality is an inexhaustible source for potential accumulation, and has creative and innovative value in the economy [Juran and Gryna 1993].

A major breakthrough in the study of quality arrived with the development of qualimetry (J. van Ettinger and J. Sittig), which comprises methods for measuring and quanti-

fying quality indicators [Ettinger and Sittig 1965]. Qualimetry is a part of qualitology – an interdisciplinary area of knowledge that deals with all issues related to quality [Kolman 2009]. As an applied discipline, it develops methods for the measurement and numerical evaluation of quality [Duda 1995].

THE REASONING OF THE THEORETICAL AND METHODOLOGICAL APPROACHES

The quality of human potential is a complex hierarchical concept that characterises the development levels of different human potential characteristics, according to the environment in which they are formed and human needs. Such characteristics have different forms of expression, depending on the level of human development on which they are assessed. We proposed to use two approaches to study the quality of human potential: personal and active. The last aspect of the quality of human potential is associated primarily with the realization of the human need to work and engage in economic activity in order to satisfy other needs and interests. This section of study is not highlighted as other parameters and levels of research will be required.

The personal aspect allows us to study human potential quality in the context of individual sociogenetic levels – of the human body, individuality, and personality. At each of these levels specific relationships are formed that create what may be called system quality. In particular, at the body level, quality is formed with the degree to which vital human needs are met. At the individual level, satisfying psychological needs is of crucial importance in the creation of quality (it is only possible with the corresponding quality formed at the lowest level of human existence). In the personal aspect, measurement is complemented by the inclusion of the human in society by the activation of physical, mental and economic activity. Thus, the formation of quality is gradual. Each new state of the system is impossible without the accumulation of corresponding qualitative features on previous levels, and greatly hindered without synchronisation of processes of creating quality at all levels. Within the personal paradigm, fundamental parameters of space and time perform the particular function of forming the human potential quality system, which finds its expression in the "accretion" of life energy.

The model proposed uses three dimensions of human potential quality formation on the level of the organism: time, space and energy. Time is one of the key mechanisms in the accumulation of human potential quality. V. Vernadsky carried out a detailed study of the problem of time, based on geological and biological approaches, but projected to the entire biosphere, and accordingly humanity. In his work from 1932 "The problem of time in modern science" [Vernadsky 1980], based on an explication of the development of science and, in particular, the concept of time, he finds the newest vision, which is based on polar treatment of time and the need for harmonization of this category with entropy opened by Clausius [1868–1869]. This contradiction was subsequently resolved by synergy, so Vernadsky can be rightfully placed among the scientists who stood at its origins.

In the context of the specific topics of our research, V. Vernadsky's innovation was the rationalization of biological (life) time, which is connected with the division of life and the change of generations. This property of biological time is shown in three different processes: individual being, generational change and the evolutionary changing of life forms.

To describe these processes, scientist use the term duration (original – *dlenye*) [Vernadsky 1980], which describes brain activity being directly behind the origins. So a moment of time in the individual's experience can last for a very short time, but can have large informative content. This necessitates the development of a unit of time-space that V. Vernadsky called the empirical moment [Vernadsky 1980]. V. Vernadsky idea of time heterogeneity was later actively developed: in modern science, there are different concepts of time (individual, social, economic, geological, physical, artistic, sacred, and other types of time).

Considered from this point of view, V. Vernadsky's work makes it possible to partially substantiate the methodological principles of the study of how the formation of human potential quality changes across generations, i.e. within temporal coordinates of human life. The interdisciplinary nature of "biological time" allows one to interpret it as a system formation mechanism of reserve energy accumulation and its conversion to other forms in the boundaries of human life.

Thus, time and space from the above triad form the unity of the metric coordinates system of forming human potential quality. Although according to modern methodological approaches, the understanding of time and its role went beyond the frame of only a reference system, it is gaining attributes of a system that forms an active factor, including human potential quality [Stepura 2016].

As for the role of energy in shaping human potential quality within the personal paradigm, it is one of the streams (along with material and informative) that provide human activity. The entire cycle of human life is accompanied by processes of energetic metabolism. The source of energy is solar energy transformed into heat and chemical compounds that form minerals and biological processes. These processes are transformed in particular in the cultivation of biological species that make up the human diet over time and are an external source of energy for the organism. At the individual level, the flow of energy, its conversion and conservation in the body are associated with several biological processes: breathing, food and sleep. The energy obtained from outside the body is transformed into the energy of chemical compounds and physical energy (heat) to eventually form the organism's viability, i.e. health. According to some scienctific works, energy can also be delivered to humans via "energy centers", allowing the direct consumption of food to be avoided. This, however, will have to be left for other investigations.

The basis for the formation of human energy potential is food, a prominent resource type in the economy. Calories are the unit of measure of the amount of energy coming into the body. Through work, people convert them into economic units. So, taking in energy results in an attendant consumption of energy in the form of human labour and its activity. It should ideally be balanced. A balanced diet is one that provides the individual's energy needs in accordance with its consumption, and the optimum ratio of nutrients, minerals and biologically active substances. In case of excess revenues, the overconsumption of energy produces a surplus, while the lack of consumption requires the organism to deplete its reserves. Both over- and under-consumption are harmful to human health, as they hinder normal development, lead to disease, and weaken and reduce vital forces.

Therefore, we assume that the basis of human potential quality is the three-dimensional system of parameters of time, space and energy. This article examines this approach on the level of the organism within the personal paradigm of human potential quality.

QUALIMETRY

As a science qualimetry seeks to design and develop theoretical, methodological and applied problems in the quantitative representation of quality. The assessment of quality within the framework of qualimetry, is viewed as a function ratio of the given quality indicator to the quality indicator adopted as the standard. Since quality may not be measured with a single indicator, evaluating it involves studying various assessment components. In this case, researchers can use two approaches: calculate the relative indicators that comprehensively characterise each component of quality, or assess quality at each level of its formation. The final result consists in the integral indicator of quality. The first method is more suitable for measuring the quality of products or services, but assessing the formation of quality requires the hierarchical study of each level of its accumulation.

Qualimetry methodology includes examining the properties of the object being studied and the conditions of its use. Here, a regional approach becomes more significant since the conditions of a product, resource or human potential use differ considerably by region. Inconsistency in the quality of human potential together with the conditions prevailing in regional environments leads to imbalance, incomplete implementation of qualitative potential, and reduced economic effectiveness of layouts on quality. In our view, the approach to assessing human potential quality suggested in this article corresponds to the main goal of qualimetry. However, it differs from existing techniques by combining the evaluation of internal characteristics of human potential quality and the regional environments where it is formed and used.

The study used a technique developed by a team of scientists under the supervision of M. Zgurovsky and K. Yefremov [2014] to evaluate sustainable development, which is characterised by two components: the quality of people's lives and their security. At this stage, security was not introduced to the model because the methodology is used to evaluate the human potential quality achieved in regions of Ukraine. That evaluation is based on the assumption that the formation of quality has three dimensions: spatial (ecological), time (demographic) and energy (economic).

Spatial analysis deals foremost with the study of geographical problems. However, the modern development of geographic information systems research techniques provides ample opportunities for modelling processes in various fields of science and practice, economics among them. These include logistics, marketing, banking, regional economy, and evaluating human development [Zgurovsky and Yefremov 2014]. The main function of the geographic information system for the assessment of sustainable development is implemented by means of spatial analysis. In the analytical category of human development, indicators include health, education, the labour market, demography and economy. Each of these has its own parameters. Thus, among the demographic, in particular, there are three secondary indicators of life expectancy at birth, and two mortality rates. In the concept of human development elaborated by the United Nations Development Programme (UNDP), the rate of longevity underlies human development characteristics – opportunities to live a long and healthy life. That is why one of the dimensions of human potential quality in the model proposed in this article is average life expectancy at birth. Since this study defines quality only by the physical ability of the individual to live a longer life, economic and demographic measurements related to educational development, aspects of activity such as employment and income are not introduced in the model.

The study of diet in economics is usually associated with health and food safety. Families with low income have decreased food safety [Schmidt et al. 2016]. The influence of food security on health and nutrition as a determinant of such security has been studied [Gundersen et al. 2011]. However, the relationship of the energy content of diet and household income is a controversial issue. An inverse relationship between these indicators is evident, as less wealthy people will purchase high-calorie fast foods that are poor in nutrients. However, this approach should be complemented by the thorough study of diet from the point of view of products, trace elements and nutrients [Drewnowski and Darmon 2005]. In our view, such estimates should also be accompanied by comparing the energy consumption of the standard indicators, as well as specific professional activity. This analysis is significant in size, but some conclusions cannot be justified vis-à-vis introducing the energy content of a diet to measure the human potential quality economic model.

RESEARCH METHOD

This research considers the problem of measuring the similarities between an actual vector of quality and an ideal one. To measure distances in metric space, Mahalanobis distance is used. To address more specific problems, Euclidean distance, weighted Euclidean distance and Hamming distance are suitable. In this study, we used Euclidean distance. Since the indicators of different dimensions are used for the assessment, they are standardized so they can be compared. Given that, indicators of each of the three human potential quality coordinates are as follows:

- time parameters are described with an indicator of the average life expectancy at birth, reflecting temporal limits of the quality formation process. This dimension can be described as the demographic characteristic of the human potential quality at the body level;
- spatial characteristics of the formation of human potential quality reflect regional environment favourability for human vital functions and are expressed through generalized indicators of the ecological condition (the ecological dimension);
- energy measurement within the personal paradigm of human potential concerns energy content of the human diet. The ability of families to provide balanced and high-energy food to meet the needs of the body depends on the welfare of family income. Thus, the data sampling of household living conditions survey in Ukraine [SSSU 2016a] indicate that the energy value of the average diet was 3,030 cal in 2015 – that was 206 cal lower than 2014 levels. In rural areas, the energy value of the diet was 3,290 kcal, while in urban areas it was from 2,826 to 2,996 kcal. The World Health Organisation (WHO) recommends 3,000 kcal as its standard.

In addition, expenditures on food account for 54.8% of all household expenses in Ukraine [SSSU 2016a]. Elsewhere in Europe, the share does not exceed 25%, and for residents of the UK and Sweden it is less than 10%. Poles and the citizens of Baltic countries spended in 2013 25–30% of the family budget on food, while Romanians, Serbs, Moldavians and Belarusians spend over 40% [WWW 2]. A lack of calories is not evidence of low household income, because dietary food usually contains fewer calories, but is more expensive. However, analysis of the Ukrainian diet in 2015 shows that the norms of rational consumption were reached only for grain products and potatoes, while for fruit, fish and meat even the minimum standards characterizing Ukraine's poverty threshold are not observed. The consumption of fish and fish products in 2015 was 43.0% of the minimum

rate, while fruits, berries and grapes were at 79.5%. The consumption of meat and meat products in 2015 likewise failed to reach the minimum standards.

Nor do the negative tendencies stop there for the country's average dietary figures. The ratio norm of proteins, fats and carbohydrates is 13 : 13 : 74 [MHU 1999], while the recommendations of WHO is 18 : 16 : 66. According to household assessments and consumption balances of the population in Ukraine in 2015, the real intake structure is 14 : 23 : 63 [SSSU 2016a]. The Ukrainian diet is excessively fatty, with the fat coming mostly from plant products (oils, confectionery, etc.). Excessive consumption of these fats cause cholesterol levels to rise, among other dangers. Also, there is a lack of carbohydrate intake, which is bad because carbohydrates are our main source of energy (50–60% of needed). In addition, the energy value of the Ukrainian diet, according to existing norms, only meets the needs of women's mental and light physical work and men's mental work, but is insufficient to meet the needs of tough physical labour. A specified amount of energy flow does not satisfy the needs of children older then 10 years. This measure in the evaluation model of human potential quality is referred to here as the economic.

Coordination of the various data requires standardisation. The stimulant indicators (its higher value corresponds to a positive impact on the resulting token) are subject to logistic rationing using the formula:

$$C_{norm}(x_{i,j}) = \left(1 + e^{\frac{a - x_{i,j}}{b}}\right) \tag{1}$$

where:
$x_{i,j}$ – i-th indicator of j-th region;
a – average value of i-th indicator by region;
b – standard deviation of i-th indicator by region.

Destimulant indicators (the larger indicator corresponds to an increase in the negative impact on the human potential quality) are normalized by the formula:

$$C_{norm}(x_{i,j}) = 1 - \left(1 + e^{\frac{a - x_{i,j}}{b}}\right) \tag{2}$$

The level of the regional human potential quality development is represented as a real vector value that becomes the value of one for the benchmark value of this quantity.

For each region, the Euclidean norm of the radius vector [Zgurovsky et al. 2014] of the human potential quality (P_q) is expressed as:

$$\left|\overrightarrow{P_q}\right| = \sqrt{I_t^2 + I_s^2 + I_e^2} \tag{3}$$

where:
I_t – indicator of time parameters of the formation of the regional human potential quality;
I_s – indicator of spatial parameters;
I_e – indicator of energetic parameters.

A quantitative measure of the quality of human potential is defined as the projection norm of radius vector on the ideal vector with coordinates (1, 1, 1):

$$P_q = \sqrt{I_t^2 + I_s^2 + I_e^2} \cdot \cos\alpha \tag{4}$$

where α is the angle of deviation of radius vector $\left(\vec{P}_q\right)$ from the ideal vector. Accordingly α is determined as:

$$\alpha = \arccos \frac{I_q^2 + I_n^2 + I_e^2}{\sqrt{3} \cdot \sqrt{I_t^2 + I_s^2 + I_e^2}}$$
$$0 \leq \alpha \leq \arccos \frac{1}{\sqrt{3}} \tag{5}$$

Thus, the deviation of the calculated norm of the radius vector $\left(\vec{P}_q\right)$ on the ideal vector projection will characterise the level of human potential quality development and spatial vector position–quality harmony level in the three-dimensional coordinate system. The equidistance of $\vec{P}_q$ from each of the coordinates will point to the harmony of quality, and the approximation to one of the coordinates – the dominance of the corresponding characteristics. The degree of harmonization provides the basis for the definition of the balanced influence of three selected dimensions of human potential quality and is defined as a lagging deflection angle of the vector from 1. Based on this, the degree of harmonization (G) is calculated:

$$G = 1 - \alpha \tag{6}$$

Deflection angle (α) shows the deviation of the established quality from the benchmark (ideal value) – Figure 1.

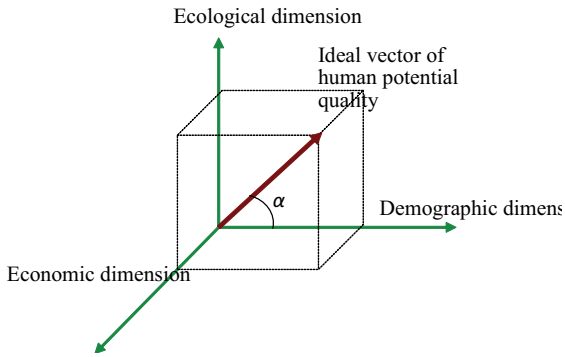

FIG.1. A schematic reflection of theoretical models for measuring human potential quality

Source: Zgurovsky and Yefremov 2014.

Therefore, the human potential quality will be expressed through an integrated assessment of joint measurement of the three quality formation conditions: time, space and life energy (the demographic, ecological and economic components).

RESULTS

Selected values of human potential quality formation indicators of Ukraine's regions and their standardized values calculated using formula (1) are shown in Table 1.

TABLE 1. Output data for the evaluation of the human potential quality in Ukraine by region

Ukraine's regions	Average life expectancy at birth in 2013		Integral indicator of environmental condition in 2010*		Calorie in average daily diet of the population in 2015**	
	actual value	standardized value	actual value	standardized value	actual value	standardized value
Vinnytsia region	71.93	0.639	0.462	0.513	3 053	0.776
Volyn region	71.46	0.539	0.636	0.787	2 981	0.694
Dnipro region	70.20	0.279	0.189	0.128	2 746	0.363
Donetsk region	70.26	0.290	0.077	0.061	2 664	0.260
Zhytomyr region	69.48	0.170	0.623	0.771	2 947	0.650
Zakarpattia region	71.02	0.443	0.620	0.767	2 805	0.446
Zaporizhia region	71.63	0.576	0.154	0.102	2 710	0.316
Ivano-Frankivsk region	73.15	0.838	0.437	0.468	2 927	0.623
Kiev region	70.38	0.312	0.455	0.500	2 748	0.366
Kirovohrad region	69.85	0.221	0.534	0.639	2 943	0.645
Lugansk region	70.77	0.389	0.342	0.307	2 252	0.030
Lviv region	73.28	0.853	0.499	0.579	2 870	0.542
Mykolaiv region	70.08	0.258	0.448	0.488	2 836	0.492
Odessa region	70.37	0.310	0.515	0.607	2 801	0.441
Poltava region	71.10	0.460	0.474	0.534	2 873	0.546
Rivne region	71.38	0.522	0.622	0.770	2 743	0.359
Sumy region	71.02	0.443	0.389	0.383	2 807	0.449
Ternopil region	73.64	0.888	0.479	0.543	2 856	0.521
Kharkiv region	72.14	0.680	0.389	0.383	2 715	0.322
Kherson region	70.00	0.245	0.504	0.588	2 951	0.655
Khmelnytsky region	71.88	0.628	0.528	0.629	2 922	0.616
Cherkasy region	71.85	0.622	0.483	0.551	3 185	0.883
Chernivtsi region	73.22	0.846	0.554	0.672	2 894	0.576
Chernihiv region	70.37	0.310	0.529	0.631	2 971	0.681

*The integral indicator of the environmental condition, integrating indicators of land, water resources and air, as calculated by the method developed by the Institute of Environmental Economics and Sustainable Development NAS of Ukraine and used to measure regional human development on the technique developed by the Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine together with the State Statistics Service of Ukraine and Ministry of economic development and trade of Ukraine [MEDTU 2012].

** Data is presented for different years because some indicators for the last three years have not been calculated by the Donetsk and Lugansk regions due to the anti-terrorist operations in the country's east.

Source: the authors' calculations on the basis of SSSU 2014, 2016a.

TABLE 2. The results of the evaluation of the human potential quality of Ukraine's regions

Ukraine's regions	The norm of radius vector $\left(\vec{P}_q\right)$	The deflection angle (α)	Degree of harmonization (G)	A quantitative measure of the quality (P_q)
Vinnytsia region	1.13	0.17	0.83	1.11
Volyn region	1.18	0.15	0.85	1.17
Dnipro region	0.48	0.36	0.64	0.44
Donetsk region	0.39	0.46	0.54	0.35
Zhytomyr region	1.02	0.45	0.55	0.92
Zakarpattia region	0.99	0.27	0.73	0.96
Zaporizhia region	0.66	0.53	0.47	0.57
Ivano-Frankivsk region	1.14	0.23	0.77	1.11
Kyiv region	0.69	0.20	0.80	0.68
Kirovohrad region	0.93	0.38	0.62	0.87
Lugansk region	0.50	0.57	0.43	0.42
Lviv region	1.16	0.21	0.79	1.14
Mykolaiv region	0.74	0.26	0.74	0.71
Odessa region	0.81	0.26	0.74	0.78
Poltava region	0.89	0.07	0.93	0.89
Rivne region	1.00	0.30	0.70	0.95
Sumy region	0.74	0.07	0.93	0.74
Ternopil region	1.16	0.25	0.75	1.13
Kharkiv region	0.84	0.33	0.67	0.80
Kherson region	0.91	0.35	0.65	0.86
Khmelnytsky region	1.08	0.01	0.99	1.08
Cherkasy region	1.21	0.21	0.79	1.19
Chernivtsi region	1.22	0.16	0.84	1.21
Chernihiv region	0.98	0.30	0.70	0.94

Source: the authors' calculations.

Regional indices of the level of human potential quality are calculated according to output data from Table 1 and formulas (3)–(6) – Table 2. Figure 2 shows the degree of harmonization of quality and its quantitative measure in the order of regions it rates.

Based on these calculations, it can be concluded that it is not only the level of human potential quality achieved that is important, but also the degree to which all indicators are harmonized that characterise the time-space and energy factors of its formation. Achievement of relatively high indicators of quality due to only one or two indicators (as for example in the Cherkasy region, where high values of caloric nutrition smoothed out the average indicator values by the other parameters, causing quality to be assessed as quantitatively

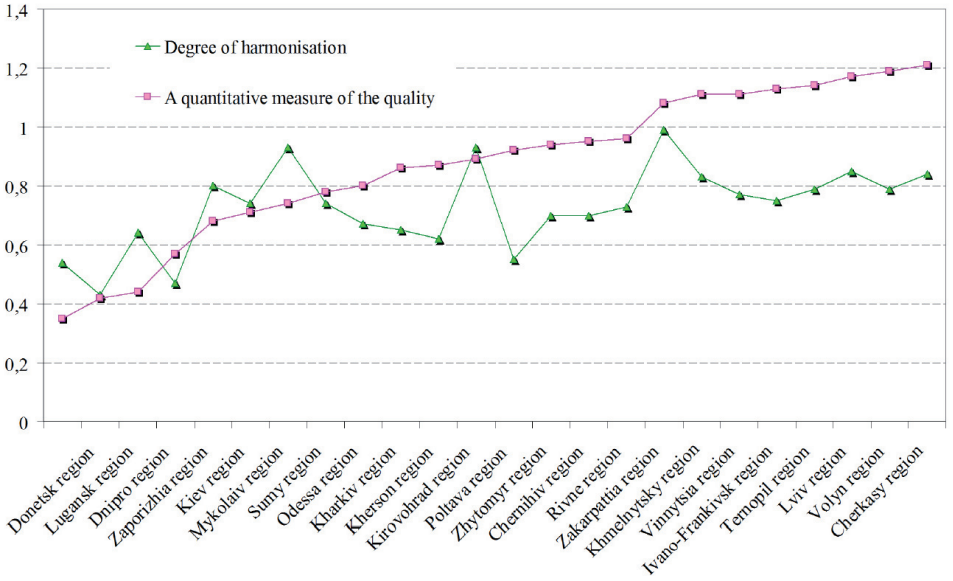

FIG. 2. The degree of harmonization and a quantitative measure of the human potential quality of Ukraine's regions

Source: the authors' calculations.

high) is not a categorically positive sign. Low degrees of harmonization are observed in Donetsk, Lugansk, Zaporizhia and Zhytomyr regions, which have significant fluctuations of three parameters (mostly life expectancy or the condition of the environment). Therefore, analytical generalisation should be carried out using all data listed in Table 2, or at least those in Figure 2. Under such circumstances, higher indicators were achieved in the Poltava and Khmelnytsky regions, where relatively average indicators were accompanied by extensive harmonization. Finally, the quantitative measure of the human potential quality in the seven highest-rated regions (Vinnytsia, Ivano-Frankivsk, Lviv, Ternopil, Volyn, Cherkasy, Chernivtsi region) was caused by a single high value – life expectancy above average – in the quality parameters (Ternopil, Lviv, Chernivtsi regions).

CONCLUSION

The methods of estimating regional human potential quality is one of the parts of this comprehensive research on the formation of quality. The complexity of this investigation should be complemented in future with the displacement of focuses of research at different levels of quality formation, beyond the level of the body, listed in this article. Future levels may include the individual, household, community, ethnic group, to name a few. The methods discussed here are suitable for analysis at any of the levels presented, with the remaining time-spatial and energetic three-dimensionality of

human potential quality formation system, however initial parameters (variables) will be absolutely distinctive. Beyond that, further research may include a security parameter, which is relevant given the increasing risks of the globalized world. In any case, estimation results should provide detailed material for seeking ways to save and grow regional human potential quality.

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Summary. The article evaluates the main parameters of human potential quality of Ukraine's region. The assessment is based on the quantitative measurement of sustainable development. The Euclidean metric was used. The quality of human potential as a multi-structural phenomenon characterizes the levels of human potential characteristics developed according to the environment of its formation, as well as public and personal needs. It is indicated that a structural approach should be used to study the quality of regional human potential. This necessitates the separation of certain levels of sociogenesis. Those levels include the human body, individuality and personality. Quality is formed at each of them. In this article, using qualimetry, a quantitative measure of quality was evaluated using the level of the human body. This was the basis for the premise that the quality of human potential is formed in a three-dimensional system of time, space and energy parameters, corresponding to the demographic, ecological and economic dimensions. Various indicators can be the characteristics of each of the parameters, depending on the research focus. Using the methods proposed, the quality of the human potential of Ukrainian regions was evaluated. Indicators of the degree of harmonization and the quantitative measure of the quality were calculated. It was established that analytical conclusions should be considered not only the grade of the quality achieved, but also the degree of harmonisation of internal and external factors.

Key words: regional human potential quality, personal paradigm, qualimetry, time–space factors, energy, degree of harmonization

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