INTERDISCIPLINARY APPROACH TO ECONOMICS AND SOCIOLOGY

ECONOMICS
& Sociology

SOCIAL AND ECONOMIC DETERMINANTS OF QUALITY OF LIFE: CASE OF EUROPEAN COUNTRIES

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ABSTRACT. The article is devoted to the study of economic and social drivers of quality of life. The method of weighted sums and the Fishburn formula were employed to assess the level of quality of life. Using Ward's method and the Kalinsky-Kharabash test, three clusters of countries were identified. The relationship between indicators was modeled with the Johansen, Dickey-Fuller and Phillips-Perron tests. Five indicators of social development (children out of school, unemployment, literacy rate, hospital beds, total population) and six indicators of economic development (GDP, minimum wage, government expenditure on education, current health expenditure, state expenditure on physical culture and sports industry) were chosen to establish the relationship between the indicators. The research was focused on the data of 30 European countries. Two hypotheses were proposed and tested in the study. Hypothesis H1 was that public spending on education, health care, and sports stimulates an increase in the quality of life. This hypothesis was confirmed for all countries. Hypothesis H2 assumed that the number of children out of school, the level of unemployment, and illiteracy negatively affect the quality of life. This hypothesis was confirmed only for a small number of countries.

Introduction

According to the definition of the World Health Organization (World Health Organization, 2022), quality of life is a multidimensional construct that summarizes qualitative and quantitative indicators of an individual's life and health: physical, mental, social, and functional. Despite the continuous improvement of the quality of medical services, the introduction of new technologies that significantly ease the living conditions of the population, the expanding list of goods and services provided in the country, certain components of the quality of life of the population cause constant concern: the high level of poverty in some countries of the world, a significant decrease in the level of nation's health, an increase in the level of morbidity and mortality of the population, etc.

According to the European Commission (Eurostat, 2023), the average level of life satisfaction of the population was 7.1 in 2022, which was only 0.1 higher than in 2013, and in some EU countries it even decreased: in Germany – 6.5 compared to 7.3 in 2013, in Denmark – 7.5 compared to 8.0, and in Luxembourg – 7.1 compared to 7.5. In 2022, 6.8% of the EU population could not make ends meet and 1.9% had unmet medical needs, which is 0.5% more than in 2017.

For example, doctors around the world are concerned about people's sedentary lifestyle, which in the future will negatively affect the quality of their lives. Every year, young people are spending more and more free time watching TV, on the Internet or with a mobile phone, while the level of their physical activity is gradually decreasing. Thus, according to the WHO, today only 30–40% of young people and no more than 20% of teenagers lead a sufficiently active lifestyle (World Health Organization, 2022). This has a negative impact on public health, affects the quality of life, increases the number of obesity and overweight cases. In recent years, the survival rate of the population under the age of 65 has decreased significantly (from 82% to 79%), while the death rate per 1,000 population has increased from 7 in 2019 to 9 in 2021 (Word Bank, 2023).

The low level of physical activity of the population, as well as the inefficient state system of providing medical services (Halásková et al., 2023), sports management, social protection serve as the basis for the low effectiveness of the implementation of programs to improve the quality of life and only deepen the destructive processes in society, which are accompanied by an increase in the level of poverty, morbidity and mortality (Lyeonov et al., 2021a; Khushk et al., 2022; Kharazishvili et al., 2020).

Considering the above, the quality of life of the population should be considered as a complex indicator that integrates various components of the development of society. On the one hand, it is the result of the economic capacity of the state to meet the needs of the population, the constant expansion of the list and improvement of the quality of the services provided, the improvement of living conditions and the improvement of the welfare of the population and depends on the level of economic development of the country (Vasa, 2002; Fertő et al., 2022; Halicka & Surel, 2022; Mendoza Ocasal et al., 2022; Pramesti et al., 2022; Bartkute et al., 2023). On the other hand, the quality of life depends on the social component of the country's development, which is aimed at increasing the level of education in society, improving professional skills, forming a sense of cohesion and involvement in society (Lyeonov et al., 2021b; Kuzior et al., 2022; Mishchuk et al., 2022; Rajan, 2023; Didenko et al., 2023; Awojobi et al., 2023; Dzwigol-Baros & Dzwigol, 2021; Khalifa et al., 2023; He et al., 2021; Rosenberg & Taipale, 2022).

At the same time, despite the relevance and importance of the study of the concept of ensuring the quality of life of the population, empirical studies of the social, economic and political imperatives of its provision require a more detailed analysis.

In addition, in the conditions of a low level of quality of life, the need to reform individual components of state policy, which would be based on empirically confirmed and statistically substantiated results of economic and mathematical modeling and forecasting of the interaction of a significant spectrum of its economic and social determinants, is significantly actualized. The study of the sensitivity of the level of quality of life to the implementation of individual measures within the framework of individual components of state policy will contribute to increasing the effectiveness of the implementation of the proposed measures through the use of a wide range of economic and mathematical tools. This will make it possible to turn reforms in the field of social and economic development into an effective tool for improving the population's health and quality of life.

The paper is organized as follows: in the first chapter, a literary analysis of the content and drivers of the formation of the quality of life of the population is carried out. Based on the results of this review, the main hypotheses of the study were formed: H1 - the amount of state spending on education, health care and sports is a stimulating factor for improving the quality of life of the population; H2 - the number of children out of school, the level of unemployment and illiteracy of the population is a negative factor in reducing the quality of life of the population. The second chapter presents the methodology of scientific research, identified indicators for assessing the quality of life of the population and substantiated research methods for the connection of quality of life with economic and social indicators of the country's development. In the third and fourth chapters, the results of the analysis are presented, and the obtained results are discussed, the limitations of the study are determined, and the promising directions of future research are determined.

1. Literature review

The concept of the quality of life of the population is a complex category that takes into account both the objective and subjective components of satisfaction of individuals with their living conditions. First of all, the quality of life is related to their satisfaction with social and economic conditions, personal achievements, level of self-realization, future prospects and potential opportunities for achieving set tasks, which are located and limited by the social, cultural or physical features of their environment (Didenko et al., 2020; 2021; Kuzior et al., 2020; Bhandari, 2023; Guedjali, 2023; Koibichuk et al., 2023; Mujtaba & Kaifi, 2023).

However, to date, there are no comprehensive studies in the scientific literature on defining the quality of life as an integrated indicator that combines various components of the population's life and drivers of its formation.

Quality of life is a social indicator that affects a person's entire life. Awareness of the importance of this component of society's life at the international level contributed to the creation in 1995 of the global organization International Society for Quality of Life Research, whose main tasks were to promote and encourage research in the field of quality of life, happiness and well-being of the population.

Thus, the quality of life of the population can be considered as an integral indicator that combines four dimensions of personal identification: physical, psychological, social and cultural.

One of the problems in researching the quality of life of a society is the problem of its measurement. According to most scientists, quality of life is an indicator that summarizes objective and subjective components. If the objective can be measured quantitatively, then the subjective depends on the individual's personal perception of the degree of satisfaction with this or that process or phenomenon (Kuzior et. al., 2022b; Khuboni et. al., 2023; Aliyev et. al., 2022; Aliyev, 2022). For a person, this may be related to his personal perception of the degree of

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achievement of his life goals, which is quite individual and differs significantly among themselves. In addition, these processes are directly influenced by positive or negative situations currently occurring in a person's life.

Although an individual's quality of life may be satisfactory within one dimension, it may be inadequate in others. In addition, it is necessary to take into account the fact that the quality of a person's life is affected by the level of his subjective well-being, which depends on the actual emotional state of a person and can quickly change under the influence of objective or subjective factors.

Campbell et. al. (1976) argued that the quality of an individual's life consists of such components as: marriage, family life, health, neighbors, friends, housework. The most important factors are the availability of work (Kuzior, 2022a; Balkan & Akyuz, 2023; Kuráth et. al., 2023), living conditions in the country (Vasa & Hovhannisyan, 2007; Blažević Bognar & Pleša Puljić, 2022; Altunoğlu et. al., 2022; Piecha et. al., 2022), place of residence (Shpak et. al., 2022a; Dzwigol et. al., 2019), availability of free time, housing conditions, level of education and standard of living (Oswald & Zhao, et. al., 2022; Artyukhov et. al., 2021; Jannah et. al., 2023).

Stiglitz et al. (2009) identify three approaches to measuring quality of life. According to the first approach, the quality of life is measured through the prism of the concept of the individual's subjective well-being. The level of his perception of living conditions is determined by his psychological qualities. The second approach is based on the concept of capabilities, according to which the quality of life is equated with respect for a person's ability to set and realize the goals he seeks. The third approach is based on the concept of fair distribution and consists in the use of various non-monetary dimensions of the quality of life (except goods and services that are traded in markets).

Indicators of the country's economic development also have a significant impact on the quality of life of the population (Tkacova & Gavurova, 2023; Ben Amor, 2023; Hara, 2023; Kot & Paradowski, 2022; Daubaraite-Radikiene & Startine, 2022). Thus, Easterlin & Angelescu (2007) substantiated the positive impact of economic growth on the quality of life. Economic growth is accompanied by an increase in the amount of food, clothing and housing per capita, as well as drastic qualitative changes in the standard of living. At the same time, according to the authors, economic growth served to increase the concentration of population in cities, which led to overcrowding of air, water, and noise pollution, increased carbon dioxide emissions from cars, and the level of obesity of the population due to the consumption of more food.

Bramston et al. (2005) used a set of 37 indicators characterizing various aspects of community life (at the individual level (stress), at the level of interaction (social support) and at the community level (belonging to the neighborhood)) to assess the quality of life. The low level of satisfaction with the living conditions of the population in combination with a number of problems related to the mental health of the nation, the deterioration of the average level of its health, periodic imbalances in the country (Kaya, 2023; Hejduková & Černá, 2022; Kramarova et al., 2022; Basuki et al., 2022; Remeikienė et al., 2023) actualizes the need to find mechanisms to improve the quality of life in countries with both low and high levels of economic development (Dzwigol et al., 2020; Njegovanović, 2023; Privara, 2022; Krajčík et al., 2023); Benghebrid & Sahnouni, 2023). As one of these tools, a number of scientists and practitioners consider increasing the level of sports activity of the population, which can contribute not only to the formation of a sense of success and self-confidence, but also to the improvement of its level of health.

Cummins (1996) understands the quality of life of the population as its psychological state, which summarizes its cognitive and emotional components in terms of seven dimensions: material well-being, emotional well-being, productivity, intimacy, security, society, health.

Numerous studies confirm the benefits of regular and sufficient physical activity for an individual's health and quality of life, as it improves mood, better physical well-being, and increases resistance to stress (Koibichuk et al., 2022; Shpak et al., 2022b). Thus, in separate studies, it is substantiated that teenagers who engage in any kind of sport feel better and are more satisfied with their quality of life, while teenagers who lead a more sedentary lifestyle have a number of physical and mental health problems.

The positive impact of playing sports on the quality of life of the population is also confirmed by the developers of physical exercise programs, rehabilitators and psychologists who deal with the treatment of depression and anxiety in the population. This effect is manifested not only due to the release of endorphins, but also during interaction with other people, which is especially evident during team sports. Thus, according to the results of the study, it is emphasized that the level of quality of life of professional athletes is higher compared to the less active population.

At the same time, some scientists claim that sports have a negative impact on the quality of life of an individual. Thus, numerous studies prove that a high level of sports activity of an individual leads to the fact that he is forced to function in a highly stressful environment. Numerous physical exercises lead to their mental exhaustion, the appearance of stress and deterioration of the quality of life.

At the same time, the type of sport does not affect the quality of life of the population, since the latter depends on the personality of the athlete, and not on their socio-cultural environment. Thus, the analysis of the relationship between the quality of life of the population and the indicators of the development of the sports management system will allow us to develop optimal strategies for improving the quality of life of the population and determine the most effective tools for its management.

2. Methodological approach

The prerequisite for modeling the relationship between the quality of life and the economic and social imperatives of its provision should be the assessment of the level of the quality of life of the population as an integral indicator that summarizes its individual components.

30 European countries were selected as the research object, the research period is 2007–2021. The methodological tools of the research are the method of weighted sums, VEC/VAR modeling.

As indicators reflecting the quality of individual components of the life of the population, eight components that most fully characterize individual components of society's life will be used (table 1).

Table 1. Indicators for assessing the quality of life of the population

Indicator	Evaluation methodology	Source
International Happiness Index (IHI)	It integrates three components: subjective life satisfaction of people, life expectancy and the so-called "ecological footprint".	New Economics Foundation
Quality of life index (QLI)	Integrates nine components of quality of life: – health: life expectancy (in years). – family life: divorce rate (per 1,000 people): 1 - few divorces, 5 - many divorces. – social life: 1 - high level of church attendance or trade union membership. – material well-being: GDP per capita, purchasing power parity. – political stability and security: indices of political stability and security. – climate and geography: latitude, to distinguish between cold and hot climates. – job guarantee: unemployment rate (in %). – political freedom: average index of political and civil freedom. 1 - completely free, 7 - not free. – gender equality: the ratio of the average salary of men and women.	OECP
Quality of Life Index International Living (QLIIL)	Combines nine components: cost of living, culture, economy, environment, freedom, health, infrastructure, safety and risk, climate.	International Living magazine
Index of social progress (ISP)	Combines 53 indicators for 12 components in three components: – basic human needs: food, access to water, electricity, sanitation, personal safety; – basics of well-being: access to basic knowledge, access to information and communications, health and medical services, quality of the environment; – - providing opportunities for people: personal rights, personal freedom and freedom of choice, tolerance and inclusion, access to higher education.	Social Progress Imperative
Human Development Index (HDI)	An integral indicator combining three components: – life expectancy (longevity). – the literacy rate of the country's population (average number of years spent on education) and the expected duration of education. – standard of living (GNP per capita at purchasing power parity in US dollars).	United Nations Development Program
Gini index (JI)	A measure of statistical dispersion designed to reflect the inequality of income distribution within a nation or any other group of people.	Eurostat
Methodology of the EU European Statistical System Committee (ESSC)	Summarizes the following components: material and living conditions, productive or basic activity, health, education, leisure and interaction, economic and physical security, public administration and basic rights, environment, general perception of life	European Statistical System Committee
The European Quality of Life Survey (EQLS)	Summarizes twelve indicators: level of health, population employment, income deprivation, level of education, family, social integration, provision of housing, environment, transport, safety, recreation, life satisfaction	Eurofound

Source: *own compilation*

The determination of the integral index of the quality of life of the population will be carried out using the method of weighted sums. According to this method, the identified indices will be integrated into a single indicator of the quality of life of the population, taking into account their weighting factors.

The evaluation of the integrated index of the quality of life of the population will be carried out according to the following formula:

$$PQLI = w_{IHI} \cdot QLI + w_{QLI} \cdot QLI + w_{QLIIL} \cdot QLIIL + w_{ISD} \cdot ISP + w_{HDI} \cdot HDI + w_{JI} \cdot JI + w_{ESSC} \cdot ESSC + w_{EMQL} \cdot EMQL \qquad (1)$$

where *wi* is the weighting factor of the i-th indicator.

The weighting coefficients for each of the analyzed indices will be calculated using the Fishburn formula. The priority of each of the analyzed indices will be determined based on the method of expert evaluations. The expediency of its application is due to the lack of complete information on the importance of each of the analyzed indices and their complete consideration of all components of the population's quality of life in the evaluation process.

$$w_i = \frac{2 \cdot (n - i + 1)}{n \cdot (n + 1)}, \qquad (2)$$

where n is the total number of sub-indexes; i is the rank of the subindex.

The choice of a model describing the relationship between indicators will be carried out on the basis of data on stationarity and cointegration of data series according to the following algorithm:

1) For non-stationary data series, a vector model of the formalization of the dependence of the level of the quality of life of the population on social and economic indicators (VEC-model) will be used:
$$\Delta y_t = a_0 + A y_{t-1} + \sum_{m=1}^{p} A_m \Delta y_{t-m} + \sum_{n=0}^{q} B_n \Delta x_{t-n} + \varepsilon_t, \qquad (3)$$

where $\Delta y_t = y_t - y_{t-1}$ is the distinction operator; A is the matrix of coefficients for the first lag; A_m, B_n are matrices for each difference lag.

2) For stationary data series, a VAR model of the following form will be used:
$$y_t = \alpha_0 + \sum_{m=1}^{p} A_m y_{t-m} + \sum_{n=0}^{q} B_n x_{t-n} + \varepsilon_t \qquad (4)$$

where a_0 is vector average of the series; A_m, – matrix of coefficients for each lag; ε_t – multidimensional zero-mean Gaussian term.

3) VAR modeling will be performed for non-stationary and non-cointegrated data series.

5 indicators of social development (S1 - children out of school (primary); S2 - unemployment, total (% of total labor force); S3 - literacy rate, youth total (% of people ages 15-24) ; S4 - hospital beds (per 1,000 people); S5 - population, total) and 6 indicators of the country's economic development (E1 - GDP; E2 - minimum wage; E3 - government expenditure on education, total (% of GDP); E4 - current health expenditure per capita (current us$); E5 - the share of state expenditures on the development of physical culture and sports in the country's GDP, %; E6 - the share of expenditures on the sports sector in the structure of total expenditures, %) will be used as factor indicators.

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3. Conducting research and results

3.1. Calculation of the Index of the quality of life of the population

The prerequisite for assessing the level of quality of life is the determination of the priority of indicators and their specific weight in the integral index. The results presented in Table 1 show that the International Happiness Index (IHI), the Quality of Life Index (QLI) and the Quality of Life Index International Living (QLIIL) have the highest specific weight, and the indicators of the European Statistical System Committee (ESSC) have the lowest.

Table 2. The value of the weighting coefficients for evaluating the Index of the quality of life of the population

Subindex	The rank of the subindex, i	Weighting coefficient, wi
IHI	2.0	0.194
QLI	2.0	0.194
QLIIL	2.0	0.194
ISP	6.5	0.069
HDI	5.0	0.111
JI	6.5	0.069
ESSC	8.0	0.027
EMQL	4.0	0.138

Source: *own compilation*

The obtained values formed the basis for calculating the integral Index of the quality of life of the population (table 3).

The results of the evaluation proved the different level of quality of life of the population in European countries. According to the results of calculations in 2022, the highest values were Sweden (0.96), Hungary (0.93) and Luxembourg (0.91), the lowest were Ireland (0.34), Cyprus (0.34) and Latvia (0. 26).

In addition, the analysis of indicators in the dynamics testifies to an uneven change in the quality of life of the population in the analyzed countries. Thus, if in Poland, Luxembourg, Lithuania, Sweden, and Finland there was a slight increase in the Index of the quality of life of the population compared to the indicators of 2007 (more than 0.1), then in 18 countries the value of this indicator worsened (Ireland - decrease by 0.45; Cyprus – by 0.34; Latvia – by 0.3, etc.). Malta is the only country in which the value of the integral Index of the quality of life of the population in 2022 has not changed compared to 2007.

At the next stage of the research, we will cluster countries according to the Index of the quality of life of the population using Ward's method (Fig. 1). The advantages of this method are the ability to group countries with a simultaneous minimal increase in the intra-group sum of squared deviations, i.e. optimization of the minimal dispersion within clusters.

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Table 3. Index of the quality of life of the population

| Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Austria	0.68	0.68	0.68	0.68	0.57	0.57	0.57	0.57	0.68	0.68	0.68	0.68	0.68	0.57	0.63	0.63
Belgium	0.91	0.79	0.91	0.91	0.79	0.91	0.79	0.79	0.79	0.79	0.79	0.91	0.91	0.68	0.79	0.78
Bulgaria	0.64	0.75	0.53	0.64	0.75	0.87	0.64	0.77	0.83	0.87	0.98	0.75	0.64	0.68	0.62	0.59
Croatia	0.65	0.65	0.76	0.88	0.76	0.76	0.76	0.76	0.76	0.54	0.42	0.42	0.42	0.42	0.43	0.40
Cyprus	0.68	0.68	0.68	0.56	0.56	0.45	0.34	0.31	0.34	0.22	0.34	0.22	0.45	0.34	0.33	0.34
Czech Republic	0.68	0.56	0.68	0.56	0.45	0.34	0.45	0.45	0.45	0.45	0.68	0.79	0.68	0.56	0.59	0.59
Denmark	0.75	0.86	0.64	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.64	0.64	0.52	0.50	0.49
Estonia	0.89	0.79	0.68	0.68	0.45	0.45	0.79	0.68	0.56	0.68	0.72	0.60	0.83	0.60	0.63	0.62
Finland	0.75	0.75	0.73	0.75	0.64	0.75	0.64	0.64	0.75	0.75	0.87	0.98	0.98	0.87	0.88	0.88
France	0.76	0.76	0.76	0.76	0.76	0.76	0.88	0.76	0.76	0.76	0.76	0.76	0.76	0.65	0.74	0.73
Germany	0.79	0.79	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.57	0.57	0.68	0.68	0.68	0.61	0.61
Greece	0.75	0.75	0.75	0.64	0.64	0.75	0.75	0.79	0.68	0.79	0.81	0.82	0.82	0.82	0.82	0.83
Hungary	0.79	0.91	0.79	0.79	0.79	0.79	0.79	0.82	0.93	0.92	0.93	0.98	0.92	0.93	0.93	0.93
Iceland	0.92	0.84	0.86	0.88	0.96	0.72	0.83	0.94	0.98	0.94	0.98	0.91	0.91	0.80	0.84	0.82
Ireland	0.79	0.79	0.45	0.34	0.34	0.34	0.45	0.34	0.45	0.45	0.45	0.45	0.45	0.45	0.36	0.34
Italy	0.69	0.69	0.69	0.69	0.69	0.57	0.69	0.69	0.69	0.69	0.69	0.69	0.80	0.69	0.72	0.72
Latvia	0.56	0.56	0.11	0.13	0.19	0.12	0.12	0.22	0.22	0.22	0.34	0.34	0.22	0.24	0.24	0.26
Lithuania	0.57	0.57	0.57	0.45	0.68	0.45	0.45	0.57	0.45	0.57	0.68	0.68	0.79	0.79	0.71	0.73
Luxembourg	0.72	0.72	0.83	0.83	0.72	0.83	0.86	0.75	0.75	0.86	0.86	0.86	0.86	0.93	0.90	0.91
Malta	0.68	0.68	0.79	0.79	0.90	0.90	0.79	0.68	0.79	0.68	0.57	0.68	0.68	0.75	0.69	0.68
Norway	0.68	0.79	0.91	0.91	0.79	0.79	0.79	0.79	0.79	0.74	0.70	0.70	0.81	0.70	0.73	0.72
Poland	0.68	0.79	0.82	0.96	0.94	0.82	0.79	0.75	0.79	0.91	0.88	0.82	0.82	0.91	0.87	0.88
Portugal	0.91	0.91	0.91	0.91	0.91	0.79	0.79	0.68	0.79	0.68	0.68	0.79	0.79	0.79	0.68	0.67
Romania	0.66	0.66	0.55	0.66	0.66	0.66	0.79	0.78	0.67	0.79	0.67	0.67	0.67	0.56	0.69	0.69
Slovak Republic	0.80	0.71	0.71	0.82	0.71	0.71	0.59	0.59	0.71	0.71	0.71	0.82	0.93	0.82	0.79	0.79
Slovenia	0.68	0.68	0.68	0.78	0.79	0.79	0.57	0.68	0.79	0.68	0.68	0.79	0.68	0.68	0.71	0.71
Spain	0.68	0.46	0.56	0.79	0.56	0.34	0.34	0.34	0.45	0.45	0.45	0.56	0.56	0.34	0.49	0.50
Sweden	0.81	0.72	0.83	0.83	0.83	0.83	0.83	0.95	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.96
Switzerland	0.68	0.68	0.68	0.68	0.68	0.56	0.56	0.56	0.56	0.56	0.56	0.68	0.68	0.56	0.57	0.56
The Netherlands	0.90	0.90	0.90	0.90	0.90	0.79	0.79	0.68	0.79	0.79	0.79	0.79	0.68	0.68	0.67	0.65

Source: *own compilation*
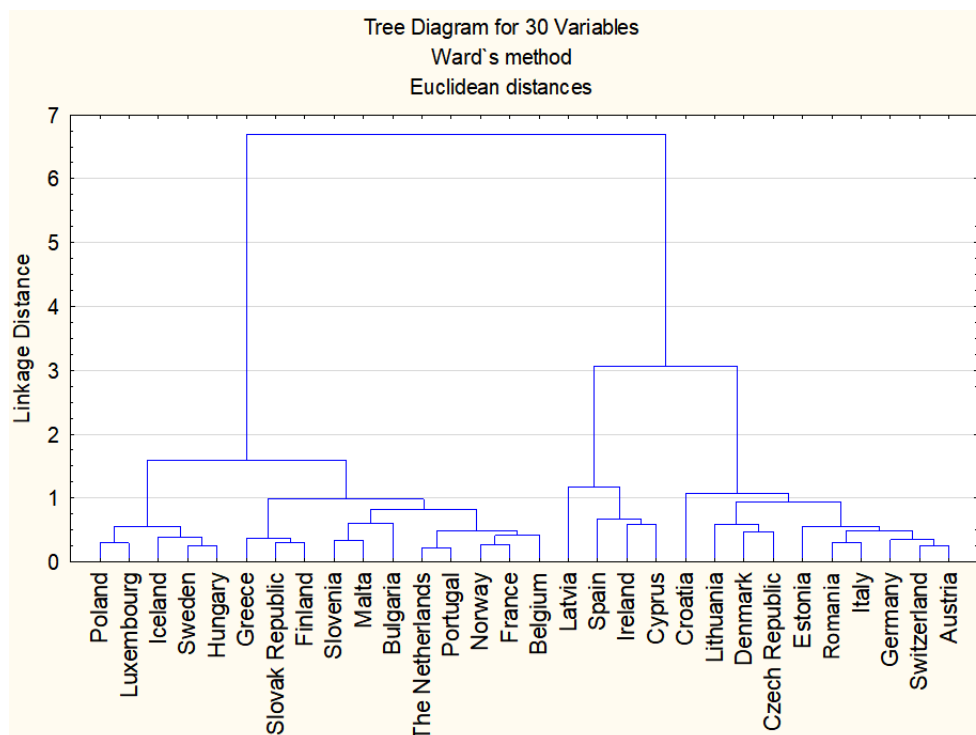
Figure 1. Results of the clustering of countries according to the Index of the quality of life of the population using the Ward method

At the next stage, we will determine the optimal number of clusters using the Kalinsky-Kharabash criterion. The calculation results shown in Table 4 prove the feasibility of dividing the countries into 3 clusters. Thus, the pseudo-F value of the Kalinsky-Kharabash index for 3 clusters is the maximum, which indicates the highest accuracy of the clustering procedure.

Table 4. Results of checking the reliability of the clustering of countries according to the Kalinsky-Kharabash criterion

Number of clusters	Kalinsky-Kharabash pseudo-F index
2	24.76
3	25.31
4	20.52
5	18.66
6	17.63
7	16.47
8	16.16
9	15.84
10	15.54
11	14.95
12	14.68
13	14.67
14	14.57
15	14.75

Source: *own compilation*

Thus, the results of the clustering of countries according to the Index of the quality of life of the population using the Ward method and the Kalinsky-Kharabash criterion allow us to divide the countries into three clusters (Table 5).

Table 5. Results of clustering of countries according to indicators of tax competitiveness formation based on Ward's method

Cluster 1	Cluster 2	Cluster 3
Austria, Denmark, Germany, Italy, Lithuania, Cyprus, Bulgaria, France, Slovenia, Poland	Estonia, Belgium, Finland, Iceland	Croatia, Czech Republic, Romania, Switzerland, Ireland, Latvia, Spain, Greece, Malta, Norway, Portugal, Slovak Republic, The Netherlands, Hungary, Luxembourg, Sweden

Source: *own compilation*

3.2. Application of VEC/VAR modeling

The obtained results form the basis for determining the economic and social drivers of the formation of the quality of life of the population of European countries.

At the initial stage, the relationship between the analyzed indicators will be evaluated using the multiple regression method. The results presented in Table 6 allow us to conclude that there is a dependence between the indicators for all analyzed countries. Taking into account the statistical significance of the obtained results at the level of 10%, 1% and 0.5% and different values of the correlation coefficients, it is possible to assert the different nature and strength of the influence of indicators of economic and social development of countries on the level of the quality of life of the population.

Economic indicators have a greater impact on the quality of life of the population compared to social indicators. The most influential factors in ensuring the quality of life of the population are the volume of GDP (E1) and the level of unemployment (E2), the least influential

are children out of school (S1) and the share of expenditures on the sports industry in the structure of total expenditures (E6). An increase in the volume of GDP by 1 point in Belgium leads to an increase in the Index of the quality of life of the population by 0.75 points, and a reduction in the unemployment rate by 1% leads to a decrease in the Index of the quality of life of the population by 0.64 points. At the same time, the impact of these indicators on the Index of the quality of life of the population differs significantly in different countries. These factors are most influential in Germany, Estonia, Croatia and Belgium, they have the least impact in Denmark and Ireland.

Table 6. Results of assessing the relationship between indicators of economic and social development and the quality of life of the population based on the multiple regression method (fragment)

Country		S1	S2	S3	S4	S5	E1	E2	E3	E4	E5	E6
Belgium	Coef	-0.19	-0.41	0.54	0.46	-0.42	0.75	-0.64	0.49	0.50	0.39	0.22
	Std. err	-0.20	-0.76	0.57	0.49	-0.45	0.80	-0.68	0.55	0.53	0.42	0.67
Bulgaria	Coef	-0.15	-0.36	0.43	0.27	-0.34	0.65	-0.56	0.42	0.40	0.32	0.19
	Std. err	-0.09	-0.69	0.37	0.32	-0.21	0.88	-0.75	0.61	0.24	0.19	0.26
Czech Republic	Coef	-0.13	-0.61	0.36	0.31	-0.28	0.78	-0.67	0.54	0.34	0.27	0.55
	Std. err	-0.03	-0.83	0.25	0.21	-0.07	0.74	-0.63	0.51	0.08	0.06	0.81
Denmark	Coef	-0.12	-0.42	0.35	0.30	-0.27	0.54	-0.46	0.37	0.32	0.25	0.37
	Std. err	-0.01	-0.34	0.06	0.05	-0.01	0.62	-0.53	0.40	0.02	0.01	0.18
Germany	Coef	-0.13	-0.68	0.37	0.32	-0.29	0.87	-0.74	0.60	0.34	0.27	0.61
	Std. err	-0.03	-0.86	0.26	0.22	-0.07	0.86	-0.73	0.59	0.08	0.06	0.86
Estonia	Coef	-0.11	-0.81	0.30	0.26	-0.24	0.85	-0.72	0.71	0.28	0.22	0.75
	Std. err	-0.01	-0.46	0.08	0.07	-0.02	0.85	-0.72	0.55	0.39	0.31	0.56
Ireland	Coef	-0.07	-0.50	0.20	0.17	-0.15	0.63	-0.54	0.43	0.18	0.14	0.80
	Std. err	-0.01	-0.41	0.11	0.09	-0.03	0.52	-0.44	0.36	0.55	0.44	0.45
Greece	Coef	-0.16	-0.47	0.45	0.39	-0.36	0.59	-0.51	0.41	0.42	0.33	0.41
	Std. err	-0.17	-0.64	0.48	0.41	-0.38	0.81	-0.69	0.56	0.45	0.36	0.57
Spain	Coef	-0.13	-0.61	0.36	0.31	-0.28	0.78	-0.66	0.54	0.34	0.27	0.54
	Std. err	-0.08	-0.77	0.22	0.19	-0.17	0.79	-0.67	0.67	0.21	0.16	0.70
France	Coef	-0.11	-0.85	0.31	0.26	-0.24	0.76	-0.65	0.52	0.28	0.23	0.54
	Std. err	-0.03	-0.77	0.21	0.18	-0.06	0.85	-0.72	0.68	0.07	0.05	0.69
Хорватія	Coef	-0.10	-0.66	0.29	0.25	-0.23	0.86	-0.73	0.59	0.27	0.21	0.85
	Std. err	-0.05	-0.46	0.37	0.21	-0.10	0.52	-0.45	0.15	0.12	0.01	0.16

Source: *own compilation*

For further modeling of the dependence between the analyzed indicators, we will check the determined data series for stationarity. For this purpose, the analysis of the array of data using the Dickey-Fuller test.

The fragment of the calculation results presented in Table 5 confirms the non-stationarity of the data series. All obtained absolute values of the indicators are less than the critical ones at the levels of statistical significance of 1%, 5% and 10%. Thus, the results of the calculations of the Dickey-Fuller and Phillips-Peron tests confirm the conclusions regarding the relationship between the analyzed indicators.

Table 5. Results of testing data series using the Dickey-Fuller and Phillips Perron tests (fragment)

Country	Indicator	Dickey-Fuller test			Phillips-Perron test		
		Probability	Lag	Test Statistics	Probability	Lag	Test Statistics
Belgium	S1	0.009	2	3.091	0.009	2	0.009
	S2	0.067	2	2.443	0.646	2	0.067
	S3	0.874	2	0.095	0.874	2	0.095
	S4	0.000	2	4.193	0.000	2	4.193
	S5	0.382	2	1.555	0.447	2	1.427
	E1	0.007	2	3.173	0.039	2	2.648
	E2	0.078	1	2.384	0.042	2	2.612
	E3	0.890	1	0.425	0.890	2	0.425
	E4	0.026	1	2.782	0.018	2	2.895
	E5	0.136	1	2.143	0.127	2	2.176
	E6	0.000	2	4.051	0.029	2	2.739
Bulgaria	S1	0.001	2	3.748	0.001	2	3.748
	S2	0.015	2	2.955	0.384	2	1.549
	S3	0.010	2	3.076	0.344	2	1.629
	S4	0.208	2	1.932	0.208	2	1.932
	S5	0.652	1	0.982	0.009	2	0.982
	E1	0.787	1	0.546	0.823	2	0.359
	E2	0.827	1	0.341	0.829	2	0.324
	E3	0.359	2	1.599	0.383	2	1.553
	E4	0.561	2	1.196	0.687	2	0.888
	E5	0.011	2	3.801	0.011	2	3.801
	E6	0.083	2	3.005	0.794	2	1.229
Czech Republic	S1	1.075	2	0.117	1.075	2	0.117
	S2	0.000	2	5.157	0.000	2	5.157
	S3	0.469	1	1.913	0.550	2	1.755
	S4	0.009	1	3.903	0.048	2	3.257
	S5	0.095	1	2.932	0.052	2	3.212
	E1	1.095	1	0.523	1.095	2	0.523
	E2	0.032	2	3.421	0.023	2	3.561
	E3	0.168	2	2.635	0.156	2	2.676
	E4	0.000	2	4.982	0.036	2	3.368
	E5	0.001	2	4.608	0.001	2	4.608
	E6	0.018	2	3.634	0.473	2	1.905

Source: *own compilation*

At the next stage, using the Dickey-Fuller test, we will test the first differences of the data series for stationarity. The results of the calculations (a fragment is given in Table 6) testify to the non-stationarity of the analyzed data series. The obtained values of the t-statistics for the first differences of the data are higher than their critical values at the 1%, 5%, and 10% levels of statistical significance.

Table 6. Results of checking the first differences of data series for stationarity (fragment)

Country	Indicator	Dickey-Fuller test		
		Probability	Lag	Test Statistics
Belgium	S1	0.009	2	3.091
	S2	0.008	2	3.163
	S3	0.024	2	2.804
	S4	0.000	2	4.193
	S5	0.005	2	3.847
	E1	0.007	2	3.173
	E2	0.078	1	2.384
	E3	0.028	1	0.425
	E4	0.026	1	2.782
	E5	0.001	1	3.624
	E6	0.000	2	4.051
Bulgaria	S1	0.001	2	3.748
	S2	0.044	2	2.595
	S3	0.010	2	3.076
	S4	0.002	2	3.478
	S5	0.027	1	2.762
	E1	0.040	1	2.635
	E2	0.042	1	2.620
	E3	0.000	2	4.562
	E4	0.040	2	2.640
	E5	0.011	2	3.801
	E6	0.009	2	3.890
Czech Republic	S1	0.029	2	3.449
	S2	0.000	2	5.157
	S3	0.006	1	4.732
	S4	0.009	1	3.903
	S5	0.095	1	2.932
	E1	0.003	1	0.523
	E2	0.032	2	3.421
	E3	0.001	2	4.458
	E4	0.000	2	4.982
	E5	0.001	2	4.608
	E6	0.045	2	3.192

Source: *own compilation*

One of the criteria for making a decision regarding the expediency of applying the VAR or VAC model of formalizing the relationship between the Index of the quality of life of the population and the economic and social indicators of the country's development is the verification of data series for cointegration. For this purpose, the Johansen test will be applied.

The analysis of the obtained results (table 7) allows us to draw a conclusion about the cointegration of the data series. For all indicators, the calculated values exceed the critical values.

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Table 7. Results of testing data series for cointegration using the Johansen test (fragment)

Country	Rank	Critical value		T- statistics					
		5%	1%	E1	E2	E3	E4	E5	E6
Belgium	0	15.41	20.04	34.84	23.64	33.72	22.88	36.20	24.57
	1	3.76	6.65	10.08	10.08	9.76	9.76	10.47	10.47
Bulgaria	0	15.41	20.04	31.03	38.25	30.03	37.02	32.24	39.74
	1	3.76	6.65	9.80	8.80	9.49	8.52	10.18	9.15
Czech Republic	0	15.41	20.04	17.11	37.57	16.55	36.36	17.77	39.04
	1	3.76	6.65	2.00	12.86	1.94	12.44	2.08	13.36
Denmark	0	15.41	20.04	16.44	28.62	15.91	27.70	17.08	29.74
	1	3.76	6.65	1.75	8.70	1.70	8.42	1.82	9.04
Germany	0	15.41	20.04	24.02	16.31	23.25	15.78	24.96	16.94
	1	3.76	6.65	6.95	6.95	6.73	6.73	7.22	7.22
Estonia	0	15.41	20.04	21.41	26.37	20.72	25.52	22.24	27.40
	1	3.76	6.65	6.75	6.07	6.54	5.87	7.02	6.31
Ireland	0	15.41	20.04	14.26	25.91	13.80	25.08	14.82	26.92
	1	3.76	6.65	1.38	8.86	1.33	8.58	1.43	9.21
Greece	0	15.41	20.04	39.37	26.72	38.11	25.86	40.91	27.77
	1	3.76	6.65	11.39	11.39	11.03	11.03	11.84	11.84
Spain	0	15.41	20.04	35.07	43.23	33.94	41.84	36.44	44.91
	1	3.76	6.65	11.08	9.95	10.72	9.63	11.51	10.34
France	0	15.41	20.04	19.33	42.46	18.71	41.10	20.09	44.12
	1	3.76	6.65	2.26	14.53	2.19	14.06	2.35	15.10
Croatia	0	15.41	20.04	18.58	32.35	17.98	31.30	19.30	33.61
	1	3.76	6.65	1.98	9.83	1.92	9.51	2.06	10.21
Poland	0	15.41	20.04	27.15	18.43	26.28	17.84	28.21	19.15
	1	3.76	6.65	7.86	7.86	7.60	7.60	8.16	8.16
Portugal	0	15.41	20.04	24.19	29.80	23.41	28.84	25.14	30.97
	1	3.76	6.65	7.63	6.86	7.39	6.64	7.93	7.13
Sweden	0	15.41	20.04	16.12	29.28	15.60	28.34	16.75	30.43
	1	3.76	6.65	1.55	10.02	1.50	9.69	1.62	10.41
Iceland	0	15.41	20.04	21.3	46.9	20.6	45.4	22.2	48.7
	1	3.76	6.65	2.5	16.0	2.4	15.5	2.6	16.7
Norway	0	15.41	20.04	20.5	35.7	19.8	34.5	21.3	37.1
	1	3.76	6.65	2.2	10.8	2.1	10.5	2.3	11.3
Switzerland	0	15.41	20.04	30.0	20.3	29.0	19.7	31.1	21.1
	1	3.76	6.65	8.7	11.4	8.8	9.0	9.4	9.6

Source: *own compilation*

Thus, based on the results of the calculations, it is advisable to use the VAR method to formalize the relationship between the indicators of the economic and social development of the country and the Index of the quality of life of the population. In addition, an important stage of research is taking into account the duration of the time lag during which the greatest influence of factor indicators is achieved. This will increase the reliability of the built model.

The fragment of the results shown in Table 8 shows that in Finland the maximum time lag between the financing of the field of physical culture and sports and the change in the quality of life of the population is 4 years. It is for this period that the highest values of the Akaike, Hannan-Quinn, and Schwartz-Bayes criteria are observed.

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Table 8. The maximum lag of the impact of financing the field of physical culture and sports on the Index of the quality of life of the population (fragment for Finland)

Lag	LL	LR	df	p	FPE	AIC	HQOC	SBIC
0	95.698	0.000	23		1.248E-15	-25.971	-26.429	-25.971
1			23		-1.23E-74			
2	1274.884		23			-354.646	-357.857	-354.646
3	1268.813	-12.139	23			-352.911*	-356.123*	-352.911*
4	1272.684	7.744	23	0.959		-354.018	-357.229	-354.018
5	1285.575	25.784	23	0.350		-357.701	-360.913	-357.701
6	1294.191	17.237	23	0.811		-360.163	-363.375	-360.163

Akaike, Hannan-Quinn, and Schwartz-Bayes criteria for other European countries show that for Austria, Bulgaria, Croatia, France, Germany, Italy, Spain, Lithuania, and Latvia, the length of the time lag for health financing indicators (E4), physical culture and sports (E5 and E6) is 3 years, for the rest of the countries - 4 years; government expenditure on education (E3) affect the Index of the quality of life of the population in a time lag of 4 years for all European countries, in most European countries the volume of GDP (E1) and the minimum wage (E2) exert an influence with a time lag of 2 years. The number of children out of school (S1) exerts influence with a time lag of 6 years; unemployment rate (S2), literacy rate (S3), population size (S5) - with a lag of 3 years.

Conclusion

The conducted research made it possible to determine the economic and social drivers of improving the quality of life of the population for 30 European countries. Using the method of weighted sums and the Fishburn formula, the Index of the quality of life of the population was determined. Most countries have the Index of the quality of life of the population above the average (0.6 or more), including the following countries: Sweden, Hungary, Luxembourg, Finland, Poland, Greece, Iceland, Slovak Republic, Belgium, France. Sweden (0.96), Hungary (0.93) and Luxembourg (0.91) had the highest values of the Index of the quality of life of the population, the lowest – Ireland (0.34), Cyprus (0.34) and Latvia (0.26).

Based on the Ward method and the Kalinsky-Kharabash criterion, countries were clustered according to the Index of the quality of life of the population. The first cluster included countries characterized by a high level of human development and a low level of income inequality (Austria, Denmark, Germany, Italy, Lithuania, Cyprus, Bulgaria, France, Slovenia, Poland). The second cluster includes four countries (Estonia, Belgium, Finland, Iceland) characterized by sufficiently high indicators of the quality of life of the population.

With the help of Johansen, Dickey-Fuller and Phillips-Perron tests, hypothesis H1, which suggested that the amount of public spending on education, health care, and sports is a stimulating factor for improving the quality of life of the population for all the analyzed countries was confirmed. At the same time, the change in the amount of financing of the health, physical culture and sports sector affects the Index of the quality of life of the population of Austria, Bulgaria, Croatia, France, Germany, Italy, Spain, Lithuania and Latvia with a time lag of 3 years, for the rest of the countries - 4 years; a change in the volume of government expenditure on education affects the Index of the quality of life of the population in a time lag of 4 years for all EU countries. At the same time, the volume of GDP and the minimum wage influence the Index of the quality of life of the population of all analyzed countries with a time lag of 2 years.

The second hypothesis in the study H2, according to which the number of children out of school, the level of unemployment and illiteracy of the population is a negative factor of the

decline in the quality of life of the population, was confirmed only for a small number of countries. The number of children out of school affects the Index of the quality of life of the population with a time lag of 6 years; unemployment rate, literacy rate and population size - with a lag of 3 years.

Thus, based on the results of the study, it is possible to draw general conclusions that the economic indicators of the country's development are the biggest driver of improving the quality of life of the population, which consists both in the growth of the level of material well-being (the size of GDP and average wages), and in the growth of funding for the development of physical culture and sports, population improvement, education, etc. (Halicka & Surel 2022; Lyeonov et al., 2021b).

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References

Aliyev, K. (2022). Well-being costs of perceived job insecurity: Mediating role of financial satisfaction, subjective healthiness and institutional trust. *Journal of International Studies*, *15*(2), 140-156. https://doi.org/10.14254/2071-8330.2022/15-2/10

Aliyev, K., Gasimov, I., & Eynalov, H. (2022). Institutional trust and life satisfaction in selected Post-Soviet countries: The mediating role of 'perceived relative income'. *Economics and Sociology, 15*(1), 94-108. https://doi.org/10.14254/2071- 789X.2022/15-1/6

Altunoğlu, A.E., Kocakula, Ö., & Özer, A. (2022). Demographic differences matter on job outcomes: psychological contract's mediating role. *Business, Management and Economics Engineering*, *20*(1), 1–22. https://doi.org/10.3846/bmee.2022.14895

Artyukhov, A., Volk, I., Vasylieva, T., & Lyeonov, S. (2021). The role of the university in achieving SDGs 4 and 7: A ukrainian case. Paper presented at the E3S Web of Conferences, 250. https://doi.org/10.1051/e3sconf/202125004006

Awojobi, O.N., Kwabia, E., Adeniji, O.A. (2023). Social protection programmes in mitigating the socio-economic impacts of the Covid-19 pandemic: a comparative study of Ghana, Kenya, and South Africa. *SocioEconomic Challenges, 7*(3), 21-47. https://doi.org/10.61093/sec.7(3).21-47.2023

Balkan, D., & Akyuz, G.A. (2023). Labour productivity analysis of manufacturing sector in Turkey against EU. *Journal of Business Economics and Management*, *24*(2), 245–273. https://doi.org/10.3846/jbem.2023.19059

Bartkute, R., Griesiene, I., Grikietyte-Cebataviciene, J., Delibasic, M. (2023). The impact of social and economic factors on income inequality in EU countries. *Transformations in Business and Economics, 22*(3), 464-484.

Basuki, B., Szczepańska-Woszczyna, K., Rajiani, I., Widyanti, R., & Kot, S. (2022). Working from home arrangement in delivering public service during the COVID-19 pandemic: innovation or irritation? *Administratie si Management Public, 39*, 26-39. https://doi.org/10.24818/amp/2022.39-02

Ben Amor, M. (2023). Economic Growth and Unemployment Relationship in Tunisia: an Empirical Evidence from ARDL Bound Test Approach. *Montenegrin Journal of Economics, 19*(2), 73-84.

Benghebrid, R., & Sahnouni, M. (2023). Telework: What is impact on the Algerian employee? *SocioEconomic Challenges, 7*(3), 55-62. https://doi.org/10.61093/sec.7(3).55-62.2023

Bhandari, M.P. (2023). The Fundamental Principles of Social Sciences. *Business Ethics and Leadership, 7*(2), 73-86. https://doi.org/10.21272/bel.7(2).73-86.2023

Blažević Bognar, Z., & Pleša Puljić, N. (2022). The influence of media on impulsive buying in the era of the COVID-19 pandemic. *Business, Management and Economics Engineering*, *20*(1), 41–58. https://doi.org/10.3846/bmee.2022.15919

Bramston, P., Chipuer, H., & Pretty, G. (2005). Conceptual principles of quality of life: an empirical exploration. *Journal of Intellectual Disability Research, 49*(10), 728–733. http://dx.doi.org/10.1111/j.1365-2788.2005.00741.x

Campbell, A., Converse, P., Rogers, W. (1976). The quality of American Life: perception, evaluation, and satisfaction. New York:Rasel Sage Foundation.

Cummins, R. A. (1996). The domain of life satisfaction: an attempt to order chaos. *Social Indicators Research, 38*, 303–328. https://doi.org/10.1007/BF00292050

Daubaraite-Radikiene, U., & Startine, G. (2022). Index-Based Measurement of Creative Industries' Impact on National Economy. *Engineering Economics, 33*(1), 13-26. http://doi.org/10.5755/j01.ee.33.1.27869

Didenko, I., Petrenko, K. & Pudlo, T. (2023). The role of financial literacy in ensuring financial inclusion of the population. *Financial Markets, Institutions and Risks, 7*(2), 72-79. https://doi.org/10.21272/fmir.7(2).72-79.2023

Didenko, I., Volik, K., Vasylieva, T., Lyeonov, S., & Antoniuk, N. (2020). Migration, environment, and country safety: Analysis of touchpoints. Paper presented at the E3S Web of Conferences, 202. https://doi.org/10.1051/e3sconf/202020203028

Didenko, I., Volik, K., Vasylieva, T., Lyeonov, S., & Antoniuk, N. (2021). Environmental migration and country security: Theoretical analysis and empirical research. Paper presented at the E3S Web of Conferences, 234. https://doi.org/10.1051/e3sconf/202123400010

Dzwigol, H., Aleinikova, O., Umanska, Y., Shmygol, N., & Pushak, Y. (2019). An Entrepreneurship Model for Assessing the Investment Attractiveness of Regions. *Journal of Entrepreneurship Education, 22*, 1-7.

Dzwigol, H., Dzwigol-Barosz, M., Miskiewicz, R., & Kwilinski, A. (2020). Manager Competency Assessment Model in the Conditions of Industry 4.0. *Entrepreneurship and Sustainability Issues, 7*(4), 2630–2644.

Dzwigol-Baros, M., & Dzwigol, H. (2021). Managing Family Businesses in Light of Methodological Assumptions for Higher Education. *E3S Web of Conferences,* (307), 06003. https://doi.org/10.1051/e3sconf/202130706003.

Easterlin, R. A., & Angelescu, L. (2007). Modern Economic Growth and Quality of Life: Cross Sectional and Time Series Evidence. IZA Discussion Papers. Bonn: Institute for the Study of Labor (IZA). http://nbn-resolving.de/urn:nbn:de:101:1-20080402198.

Eurostat (2023). Quality of life database. https://ec.europa.eu/eurostat/web/quality-of-life/database

Fertő, I., Bojnec, Š. & Podruzsik, S. (2022). Do Subsidies Decrease the Farm Income Inequality in Hungary? *AGRIS on-line Papers in Economics and Informatics*, *14*(2), 49-56. https://doi.org/10.7160/aol.2022.140204

Guedjali, A. (2023). Careers of Algerian Women Managers: The Psychological Drivers of Discrimination in Professional Careers. *Business Ethics and Leadership, 7*(2), 1-8. https://doi.org/10.21272/bel.7(2).1-8.2023

Halásková, M., Linhartová, V., Gavurová, B., Niroda, P. (2023). Indicators of government effectiveness in European countries: Empirical analysis with the use of panel data. *Transformations in Business and Economics, 22*(1), 280-298.

Halicka, K., & Surel, D. (2022). Smart Living Technologies in the Context of Improving the Quality of Life For Older People: The Case of the Humanoid Rudy Robot. *Human Technology*, *18*(2), 191-208. https://doi.org/10.14254/1795-6889.2022.18-2.5

Hara, M. (2023). Official Development Assistance and Middle-Income Trap in the Philippines: effects, challenges, and strategies. *SocioEconomic Challenges, 7*(2), 1-20. https://doi.org/10.21272/sec.7(2).1-20.2023

He, L., Tao, J., Meng, P., Chen., D., Yan, M., & Vasa, L. (2021). Analysis of socio-economic spatial structure of urban agglomeration in China based on spatial gradient and clustering. *Oeconomia Copernicana, 12*(3), 789-819. http://doi.org/10.24136/OC.2021.026

Hejduková, P., Černá, M., (2022). COVID-19 Pandemic: New Opportunities for Employment and Education? *European Journal of Interdisciplinary Studies, 14*(1), 252-264. http://doi.org/10.24818/ejis.2022.16

Jannah, M., Arintoko, & Rifda Naufalin, L. (2023). The effect of the method of edupreneurship practice-based business center and school environment on interest in entrepreneurship with entrepreneurial motivation as a mediating variable. *International Journal of Entrepreneurial Knowledge*, *11*(1), 51–71. https://doi.org/10.37335/ijek.v11i1.185

Kaya, H. D. (2023). The Impact of the 2008-2009 Global Crisis on Loan Applications and Access to Finance. *Financial Markets, Institutions and Risks, 7*(2), 12-17. https://doi.org/10.21272/fmir.7(2).12-17.2023

Khalifa, G. S. A., Abuelhassan, A. E., Khreis, S. H. A., Soliman, M., & Hossain, M. S. (2023). Innovation Mechanism in the Hospitality Industry: A Mediated-Moderated Model. *Journal of Tourism and Services*, *14*(26), 173–196. https://doi.org/10.29036/jots.v14i26.492

Kharazishvili, Y., Kwilinski, A., Grishnova, O., & Dzwigol, H. (2020). Social Safety of Society for Developing Countries to Meet Sustainable Development Standards: Indicators, Level, Strategic Benchmarks (with Calculations Based on the Case Study of Ukraine). *Sustainability (Switzerland), 12*(21), 8953. https://doi.org/10.3390/su12218953.

Khuboni, T.C., Msosa, S.K., & Ntshangase, B.A. (2023). A Study of the Link Between Individual's Biographical Variables and Propensity for Entrepreneurial Leadership. *Business Ethics and Leadership, 7*(3), 40-49. https://doi.org/10.61093/bel.7(3).40-49.2023

Khushk, A., Ihsan Dacholfany, M., Abdurohim, D., & Aman, N. (2022). Social Learning Theory in Clinical Setting: Connectivism, Constructivism, and Role Modeling Approach. *Health Economics and Management Review, 3*(3), 40-50. https://doi.org/10.21272/hem.2022.3-04

Koibichuk, V., Drozd, S., & Somogyi, A. (2022). The effectiveness of the sports management system in Europe: High achievements, public funding and a healthy lifestyle. *Economics and Sociology, 15*(4), 264-285. https://doi.org/10.14254/2071-789X.2022/15- 4/13

Koibichuk, V., Khan, B., & Drozd, S. (2023). The USA medical insurance as a stimulating factor to increase labour efficiency. *Health Economics and Management Review, 4*(2), 40-50. https://doi.org/10.21272/hem.2023.2-04

Kot, S. M., & Paradowski, P. R. (2022). The atlas of inequality aversion: theory and empirical evidence on 55 countries from the Luxembourg Income Study database. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *17*(2), 261–316. https://doi.org/10.24136/eq.2022.010

Krajčík, V., Novotný, O., Civelek, M., & Semrádová Zvolánková, S. (2023). Digital Literacy and Digital Transformation Activities of Service and Manufacturing SMEs. *Journal of Tourism and Services*, *14*(26), 242-262. https://doi.org/10.29036/jots.v14i26.551

Kramarova, K., Švábová, L. ., & Gabrikova, B. (2022). Impacts of the Covid-19 crisis on unemployment in Slovakia: a statistically created counterfactual approach using the time series analysis. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *17*(2), 343–389. https://doi.org/10.24136/eq.2022.012

Kuráth, G., Bányai, E., Sipos, N., Venczel-Szakó, T., & Konczos-Szombathelyi, M. (2023). Trust and communication in the context of leaders and employees. *Journal of International Studies, 16*(3), 159-174. https://doi.org/10.14254/2071-8330.2023/16- 3/9

Kuzior, A. (2022). Technological Unemployment in the Perspective of Industry 4.0. *Virtual Economics*, *5*(1), 7–23. https://doi.org/10.34021/ve.2022.05.01(1)

Kuzior, A., Arefieva, O., Kovalchuk, A., Brożek, P. & Tytykalo, V. (2022a). Strategic Guidelines for the Intellectualization of Human Capital in the Context of Innovative Transformation. *Sustainability*, *14*, 11937. https://doi.org/10.3390/su141911937

Kuzior, A., Liakisheva, A., Denysiuk, I., Oliinyk, H. & Honchar, L. (2020). Social Risks of International Labour Migration in the Context of Global Challenges. *Journal of Risk Financial Management*, *13*, 197. https://doi.org/10.3390/jrfm13090197

Kuzior, A., Ober, J. & Karwot, J. (2022b). Employee Attitudes towards Employee Evaluation Systems in the Utility Sector: A Case Study of Sewage and Water Supply Ltd., Rybnik, Poland. *Sustainability*, *14*, 12436. https://doi.org/10.3390/su141912436

Kwilinski, A., Vyshnevskyi, O., & Dzwigol, H. (2020). Digitalization of the EU Economies and People at Risk of Poverty or Social Exclusion. *Journal of Risk and Financial Management, 13*(7), 142.https://doi.org/10.3390/jrfm13070142

Lyeonov, S., Bilan, S., Yarovenko, H., Ostasz, G., & Kolotilina, O. (2021b). Country's health profile: Social, economic, behavioral and healthcare determinants. *Economics and Sociology, 14*(3), 322-340. https://doi.org/10.14254/2071-789X.2021/14-3/17

Lyeonov, S., Vasilyeva, T., Bilan, Y., & Bagmet, K. (2021a). Convergence of the institutional quality of the social sector: The path to inclusive growth. *International Journal of Trade and Global Markets, 14*(3), 272-291. https://doi.org/10.1504/IJTGM.2021.115712

Mendoza Ocasal, D., Navarro Manotas, E., Ramirez, J., & García Tirado, J. (2022). Subjective well-being and its correlation with happiness at work and quality of work life: an organizational vision. *Polish Journal of Management Studies, 26,* 203-2014. https://doi.org/10.17512/pjms.2022.26.1.13

Mishchuk, H., Štofková, J., Krol, V., Joshi, O., & Vasa, L. (2022). Social Capital Factors Fostering the Sustainable Competitiveness of Enterprises. *Sustainability 2022*, 14, 11905. https://doi.org/10.3390/su141911905

Mujtaba, B. G., & Kaifi, B. (2023). Safety Audit Considerations for a Healthy Workplace that Puts «People Before Profit» and OSHA Compliance. *Health Economics and Management Review, 4*(1), 11-25. https://doi.org/10.21272/hem.2023.1-02

Njegovanović, A. (2023). Financial Evolution and Interdisciplinary Research. *Financial Markets, Institutions and Risks, 7*(1), 71-95. https://doi.org/10.21272/fmir.7(1).71-95.2023

INTERDISCIPLINARY APPROACH TO ECONOMICS AND SOCIOLOGY

Oswald, K., & Zhao, X. (2022). Collaborative learning and individual work performance in coworking spaces. *Journal of Business Economics and Management*, 23(1), 162–179. https://doi.org/10.3846/jbem.2021.15692

Piecha, M., Čermáková, K., & Hromada, E. (2022). Determinants of House Prices and Housing Affordability Dynamics in the Czech Republic. *European Journal of Interdisciplinary Studies, 14*(2), 119-132.

Pramesti, M., Adi, I. R., & Rachmawati, R. (2022). How does financial satisfaction determine female labourers' life satisfaction during COVID-19 pandemic. *Polish Journal of Management Studies*, 25(1), 346-360. https://doi.org/10.17512/pjms.2022.25.1.21

Privara, A. (2022). Economic growth and labour market in the European Union: lessons from COVID-19. *Oeconomia Copernicana*, 13(2), 355–377. https://doi.org/10.24136/oc.2022.011

Rajan, D. (2023). Shift work, workload, and professionalism related motivators affecting job satisfaction: An empirical study among medical laboratory technicians. *Health Economics and Management Review, 4*(3), 1-21. https://doi.org/10.61093/hem.2023.3-01

Remeikienė, R., Gasparėnienė, L., & Romas Lazutka, R. (2023). Assessment of the EU Labour Market During the COVID-19 Pandemic. *Montenegrin Journal of Economics, 19*(4), 103-114

Rosenberg, D., & Taipale, S. (2022). Social and satisfied? Social uses of mobile phone and subjective wellbeing in later life. *Human Technology*, 18(1), 45–65. https://doi.org/10.14254/1795-6889.2022.18-1.4

Shpak, N., Bondarenko, Y., Sroka, W., Kulyniak, I., Tsymbalista, N., & Prosovych, O. (2022a). Strategic planning of the recreational and tourism industry development: the ukrainian evidence. *International Journal of Entrepreneurial Knowledge*, 10(1), 100–122. https://doi.org/10.37335/ijek.v10i1.158

Shpak, N., Sorochak, O., Gvozd, M., Horbal, N., Mykhalyuno, Y., & Sroka, W. (2022b). Mechanism of competitiveness management in the public healthcare: a practical aspect. *Administratie si Management Public, 39*, 40-62. https://doi.org/10.24818/amp/2022.39-03

Stiglitz, J.E., Sen, E.A. & Fitoussi J-P. (2009). Report by the Commission on the Measurement of Economic Performance and Social progress. https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf

Tkacova, A., & Gavurova, B. (2023). Economic sentiment indicators and their prediction capabilities in business cycles of EU countries. *Oeconomia Copernicana*, 14(3), 977–1008. https://doi.org/10.24136/oc.2023.029

Vasa, L. (2002). Behaviour patterns of farm managing households after the agricultural restructuring – socio-economic analysis. *Journal of Central European Agriculture 3,* 312-320.

Vasa L. & Hovhannisyan, V. (2007). Armenian rural cooperatives and marketing: dairy sector. *Gazdálkodás 51*(19), 16-24.

World Bank data (2023). https://data.worldbank.org/

World Health Organization (2022). Actividad Física. https://www.who.int/es/news-room/fact-sheets/detail/physical-activity.