“Assessment of the reforms and programs results of Ukraine’s economy sustainable development by means of neural networks”

AUTHORS	Iryna Skliar https://orcid.org/0000-0003-0669-6523 https://www.webofscience.com/wos/author/record/R-7475-2018 Nataliya Pedchenko https://orcid.org/0000-0001-5093-2453 https://www.webofscience.com/wos/author/rid/AAE-2868-2021 Victoria Strilec https://orcid.org/0000-0001-9729-9210 https://publons.com/researcher/O-3909-2018 Victoria Novikova https://orcid.org/0000-0001-7985-1489 Yevhenii Kozmenko https://orcid.org/0000-0003-2721-2997

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Iryna Skliar (Ukraine), **Nataliya Pedchenko** (Ukraine), **Victoria Strilec** (Ukraine), **Victoria Novikova** (Ukraine), **Yevhenii Kozmenko** (Ukraine)

ASSESSMENT OF THE REFORMS AND PROGRAMS RESULTS OF UKRAINE'S ECONOMY SUSTAINABLE DEVELOPMENT BY MEANS OF NEURAL NETWORKS

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Iryna Skliar, Ph.D., Associate Professor of Management Department, Sumy National Agrarian University, Sumy, Ukraine. (Corresponding author)

Nataliya Pedchenko, Doctor of Economics, Professor, Vice Rector of Poltava University of Economics and Trade, Poltava, Ukraine.

Victoria Strilec, Ph.D., Associate Professor of the Department of Finance and Banking, Poltava University of Economics and Trade, Poltava, Ukraine.

Victoria Novikova, Ph.D., Assistant Professor of the Department of Information Systems and Technologies, Bila Tserkva National Agrarian University, Bila Tserkva, Ukraine.

Yevhenii Kozmenko, Ph.D. Student, Department of Finance, Banking and Insurance, Sumy State University, Sumy, Ukraine.

Abstract

It is necessary to choose proper methodology and indicators for assessing sustainable economic development as the information becomes a tool for decision-making support of sustainable development policies and implementation of programs. In Ukraine, evaluating the results of implementation of different programs for development is essential as an analytical basis for making a strategy for the next period and a prerequisite for further progress.

Certain shortcomings of linear models for evaluating the results appeared during the design and implementation of the strategy to manage sustainable economic development. The potential for establishing erroneous targets increases in the formation of strategic objectives for the next forecast period. There is a special need to choose adequate indicators to comprehensively approximate the factors of economic development and evaluation methods that allow more sensitively measuring the results of management decisions in the implementation of the strategy.

The article evaluates the results of the Sustainable Development Strategy "Ukraine – 2020", employing the potential of the neural network method for a flexible combination of a large number of factors in constructing nonlinear models of impact on the resulting indicator. As a result of applying the neural network model with one hidden layer for evaluation, based on 16 indicators identifying economic, social, and institutional aspects of sustainable development of Ukraine, it was found that institutional transformations contribute most to achieving sustainable development. Reforms in terms of deregulation and support of entrepreneurship, property rights protection, and competitive environment have the most significant positive impact. On the other hand, low efficiency of capital market reforms, implementation of the energy efficiency program, and reform in the field of public procurement determine the need to revise the program of their fulfilment.

Keywords sustainability, evaluation, neural networks, strategy, Ukraine

JEL Classification C45, O11

INTRODUCTION

The implementation of sustainable development strategy is a prerequisite for country's progress. Appreciating this, Ukraine adopted the Sustainable Development Strategy "Ukraine – 2020" in 2015 (The Verkhovna Rada of Ukraine, 2015). This document contains a set of goals and objectives in various areas of social progress: the development of effective institutions, growth and sustainability, national security, social progress, etc. The key issues are the successful implementation of the planned steps of the strategy and priorities that the government should set today to ensure further progress. The next stage of Ukraine's development requires a strategy that should consider the results achieved, as well as correctly identify priorities for overcoming internal constraints and global challenges.

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While assessing the effectiveness of goals achievement, it is crucial to choose an evaluation tool that will impartially reveal the development trends of the economy and form an analytical basis for further program to achieve strategic priorities. The development of modern analytical tools, based on artificial intelligence, expands research opportunities. The nonlinearity of economic development caused uncertainty of transformational socio-economic processes. To assess the results of implementing the reforms and programs of Ukraine's economic development, it seems appropriate to use the method of building neural networks.This method showed its effectiveness for solving such type of tasks, which is confirmed by several studies (Yu, Huang, Lai, & Nakamori, 2007; Falat & Pancikova, 2015).

1. LITERATURE REVIEW

Research in the field of sustainable development progress assessment has a long history, including the decision-making strategies design perspective (Waas, Hugé, Block, Wright, Benitez-Capistros, & Verbruggen, 2014). Two main research areas can be distinguished, considering the scope and complexity of the issue, concerning the evaluation of programs and reforms of sustainable economic development due to the influence of the uncertainty of transformation processes. The first relates to the study of the basic characteristics of economic development and the peculiarities of its transformation. This area studies in Ukraine are focused on aspects of development and the results of reforms. Prokopenko, Slatvinskyi, Biloshkurska, and Omelyanenko (2019) studied the development of Ukraine's economy from the standpoint of investment and innovation security and offered analytical tools for trends and scenarios forecasting and its further development.

Economic development involves a set of mutually agreed positive changes in the economic system's quantitative and qualitative characteristics, which occurs at the certain (growing) stage of the life cycle and leads to the transformation of the economy (Strilets, 2019). Morseletto (2020) understands the change in the economic model aimed at resource efficiency achievement by minimizing costs, reducing primary resources and closed product cycles within the environment and socio-economic benefits. At the same time, the transformation of the economy is accompanied by a new quality of relations, organization, management, new initial moments, and drivers of growth (Bilozubenko, Yatchuk, Wolanin, Serediuk, & Korneyev, 2020; Sułkowski & Dobrowolski, 2019).

Transformation of Ukraine's economy involves qualitative changes of the economy due to the influence of factors of direct governmental action (improvement of legislation, tax, pension, social reforms) and indirect factors (informatization and digitalization of society, etc.), resulting in the creation of a new model of the national economy.

The world's economic crisis also has an impact on the transformation process, as, in particular, it has negative consequences for the banking system, such as limitation in lending; growing social tension due to the blocking of deposits of the population; mass outflow of funds from turnover, etc. (Mints, Marhasova, Hlukha, Kurok, & Kolodizieva, 2019).

The second area of scientific research relates to the evaluation of the development strategies effectiveness in Ukraine. This assessment is mainly concerned with the effectiveness of decisions made in terms of compliance with the goals adopted by governments and organizations, taking into account the geographical division and areas of economic activity (Morseletto, 2020). Bielientsov (2014) argues that the existing variety of studies of economic development strategies can be grouped according to the following objectives – assessment of the state, detection of negative phenomena and processes, and forecasting the direction of development.

However, several studies on the strategic development of Ukraine neglect the issue of assessing the effectiveness of the reforms' results. The government's available official estimates are rather limited to the relevant results (KMU, 2019).

Thus, there are two main questions: 1) what indicators are to be used to evaluate the effectiveness of the Sustainable Development Strategy "Ukraine – 2020"? 2) what methodology is to be chosen for these purposes?

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The choice of an adequate methodology for evaluating the effectiveness of the implementation of the economic development strategy in Ukraine is essential. Existing studies use different methodological approaches with a limited set of macroeconomic indicators (Bielientsov, 2014). Koilo (2020) emphasizes the need to assess Ukraine's economy through the lens of four categories of sustainable development: economy, society, governance, and environment. Sergi, Popkova, and Ekimova (2020) use two categories of indicators when assessing economic development. The first category includes indicators of the level of socio-economic development: GDP per capita, balanced financial performance of companies, employment and balance of the regional budget, the second category includes indicators of the potential of socio-economic development: fixed capital investment per capita, share of innovative products, and the level of digitalization.

The effectiveness of evaluating the reforms and programs of Ukraine's sustainable development carried out by state institutions often contains elements of subjectivism, which is reflected in an overoptimistic view of reality. The pluralism in opinions about the state of Ukraine's economy and the impact of transformation processes is due to various interpretations of key indicators of sustainable development, which relate to different interests and the asymmetry of information.

Some studies discuss that the growth of Ukraine's economy today is mainly due to extensive factors. It is necessary to improve public administration principles by introducing new technologies to ensure the economic development of the national economy at the level of post-industrial countries (EU countries) (Pyroh & Katan, 2018).

There is a wide range of macroeconomic indicators to assess the effectiveness of reforms and programs in the theory of economic analysis, but their combined implementation makes it difficult to summarize the results. Using integrated indicators to assess the trends in Ukraine's economy has several significant shortcomings: rigid set of weights in the models; complexity of analytical work; complicated assessment of future development of the object; thresholds between rating levels are averaged and subjective (Mints, 2018).

Neural networks produce more flexible and accurate nonlinear models for estimating time-series than linear ones. Neural networks are of particular importance in the study of the mass processes laws, especially for socio-economic phenomena and processes, the laws of which are formed under the influence of many interrelated factors (Kurnikov & Petrov, 2017). Thus, neural networks create the ability to learn based on the use of existing practical data by recognizing images and situations (Siedaia, 2011).

The neural network is a software-implemented system based on a mathematical model of transmission and processing of human brain impulses. It mimics the mechanism of interaction of neurons to process input information and, considering its results, learns from experience (Pryimak & Skorupka, 2011). The neural network combines autoregressive models with neural components of different levels of complexity, which improves the quality of the forecast in terms of information asymmetry (Puhachov, Hrybyniuk, & Melnyk, 2015). Neural networks allow establishing connections and performing classifications with a high degree of reliability. A significant advantage of neural networks is that they can learn and generalize the accumulated knowledge (Falat & Pancikova, 2015). In contrast to regression models, which are limited by past trends and are informative only with constant trends in research, neural networks take into account information asymmetry, growing uncertainty of transformation processes in the economy, and allow to identify nonlinear relationships.

Kharynovych-Yavorska (2017) believes that the advantage of neural networks is the lack of need to choose a mathematical model of data behavior because their construction is carried out adaptively without the participation of an expert in the learning process. Simultaneously, the disadvantage of this technique is the need for specialized software tools, the complexity of meaningful interpretation of neural networks and indeterminacy.

Falat and Pancikova (2015) confirmed the appropriateness of the neural network method as an alternative way of making accurate forecasts of various economic variables. They argue the great potential of this method for predicting econom-

ic time series, as it has a set of advantages, such as greater flexibility, automation, "black box" approach, etc.

Yu, Huang, Lai, and Nakamori (2007) emphasize a nonlinear combination of prediction as the advantage of neural networks. Although the estimates of their use for forecasting compared to other models are ambiguous, among the reasons, there are differences of data, forecasting horizons, types of neural network models, etc.

2. METHODS

The structure of neural networks is as follows: a neural network consists of many neurons grouped by the number of layers. The main layers are (1) input layers, (2) hidden layers, (3) output layers (Muradkhanli, 2018).

The process of a neural network construction has the following stages:

- data collection;
- choice of network type;
- neural network learning;
- control training for adequacy to the task;
- adjustment of parameters taking into account the previous step, final learning (Yurynets, 2016; Rudenko, Bezsonov, & Romanyk, 2019; Muradkhanli, 2018; Siedaia, 2011).

The perceptron type neural network allows identifying the internal quantitatively indeterminate, characteristic of the object of relationship modeling, affecting the initial value (Klepikova, 2018). The mechanism for calculating the output value of y assumes that the neuron has n input signals $xk \ (1 \le k \le n)$, for each neuron a given activation function $f(S)$ with a slope of a. Given that $x_0 = 1$, the initial value is calculated as follows:

$$S = \sum_{j=0}^{n} x_j w_j \quad (1)$$

$$y_i = f(S), \quad (2)$$

where w_j is the weight of the connection of the i-th neuron with the j-th neuron from the previous layer.

The network structure is set with the choice of the number of hidden layers of neurons after grouping the data, input neurons, and the transformation function, which affects the performance of the neural network (Haleshchuk, 2016). Signals from the input layer of neurons are transmitted to hidden layers, which process and convert them by logistic approximation into a step or threshold function. The resulting signal is then transmitted to the source layer of neurons, where the information is processed again to obtain the final result.

To assess the Sustainable Development Strategy "Ukraine – 2020" (The Verkhovna Rada of Ukraine, 2015), the document itself defines the indicators for the implementation of the Strategy. They are supposed to reflect the implementation of European living standards in Ukraine and Ukraine's following the world's leaders after implementing reforms and programs from 2015 to 2020. There are some results of the Sustainable Development Strategy "Ukraine – 2020" implementation performed in Table 1 for the beginning of 2020.

According to the list in Table 1, it can be seen that as of the first half of 2020, there is a significant mismatch between the values of indicators that assess the implementation of reforms and programs, targets. Among the identified 25 indicators, Ukraine achieved the expected results only in the fields of education, culture, and physical culture. Therefore, to build a new strategy for the sustainable development of Ukraine for the next long-term period, it is necessary to assess the effectiveness of the measures taken, as they had different effects on the development of the national economy.

The neural network method will be used to assess which of the reforms carried out in recent years have had the greatest impact on the development of the national economy and contributed to its qualitative transformation. Given that the mathematical neuron aims to identify the process (Jalaee, Lashkary, & GhasemiNejad, 2019), the paper aims to identify the process of influence of

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Table 1. Key indicators for assessing the implementation of the Sustainable Development Strategy "Ukraine – 2020"

Source: World Bank Group (2019), State Statistics Service of Ukraine (n.d.), Heritage Foundation (2020), World Intellectual Property Organization (2019).

Key indicators of the reforms and programs progress	Actual result at the beginning of 2020	Achieving the expected result
Ukraine will take place among the top 30 positions in the ranking of the World Bank "Doing Business"	96	Not performed
Credit rating of Ukraine – not lower than the investment category "BBB" (rating of liabilities in foreign currency by rating agency Standard and Poor's)	CCC	Not performed
Ukraine is among the 40 best countries according to the global competitiveness index calculated by the World Economic Forum	84	Not performed
GDP (purchasing power parity) per capita, calculated by the World Bank, will increase to USD 16,000	USD 9283.43	Not performed
Net foreign direct investment for the period 2015–2020 will amount more than USD 40 billion	No indicator	–
The maximum ratio of the state budget deficit to the gross domestic product according to the calculations of the International Monetary Fund will not exceed 3 percent	10.1%	Not performed
The maximum ratio of total public debt and state-guaranteed debt to the gross domestic product according to the calculations of the International Monetary Fund will not exceed 60 percent	67.6%	Not performed
The energy intensity of the GDP will be 0.2 tons of oil equivalent per USD 1,000 of gross domestic product according to the International Energy Agency	0.36	Not performed
Expenditures on national security and defense will be at least 3 percent of gross domestic product	1.02%	Not performed
The number of professional soldiers per 1,000 population will increase from 2.8 to 5.6 people according to the calculations of the Stockholm International Peace Research Institute	2.8	Not performed
According to the Corruption Perceptions Index by Transparency International, Ukraine will enter the top 50 countries in the world	144	Not performed
According to the results of the survey, the level of trust of the expert community (lawyers, jurists) in the court will be 70 percent	No indicator	–
According to the results of a nationwide poll, the level of public confidence in law enforcement agencies will be 70 percent	No indicator	–
Renewal of the staff of civil servants in law enforcement agencies, courts and other state bodies by 70 percent	No indicator	–
The limit of the share of one supplier in the total volume of purchases of any of the energy resources will not exceed 30 percent	60%	Not performed
The average life expectancy of the World Bank will increase by 3 years	71	Not performed
The share of local budgets will be at least 65 percent in the consolidated state budget	31%	Not performed
The share of broadband Internet penetration according to the World Bank will be 25 subscribers per 100 people	8.83	Not performed
75 percent of graduates of secondary schools will speak at least two foreign languages, which will be confirmed by international certificates	No indicator	–
Ukraine will take part in the international survey on the quality of education PISA and will be among the 50 best countries – participants in such a survey	39	Performed
Ukraine together along with the World Bank will develop an indicator of well–being of citizens, determine its target value and monitor changes in such an indicator	No indicator	
According to the results of a nationwide poll, 90 percent of Ukrainian citizens will feel proud of their country	83%	Not performed
During participation in the XXXII Summer Olympic Games Ukraine will win at least 35 medals; 51 executed		
According to the global index of competitiveness in the struggle for talent, which is calculated by one of the world's leading business schools (INSEAD), Ukraine will enter the top 30 countries in the world	66	Not performed
20 films of Ukrainian production will be released in 2020	22	Performed

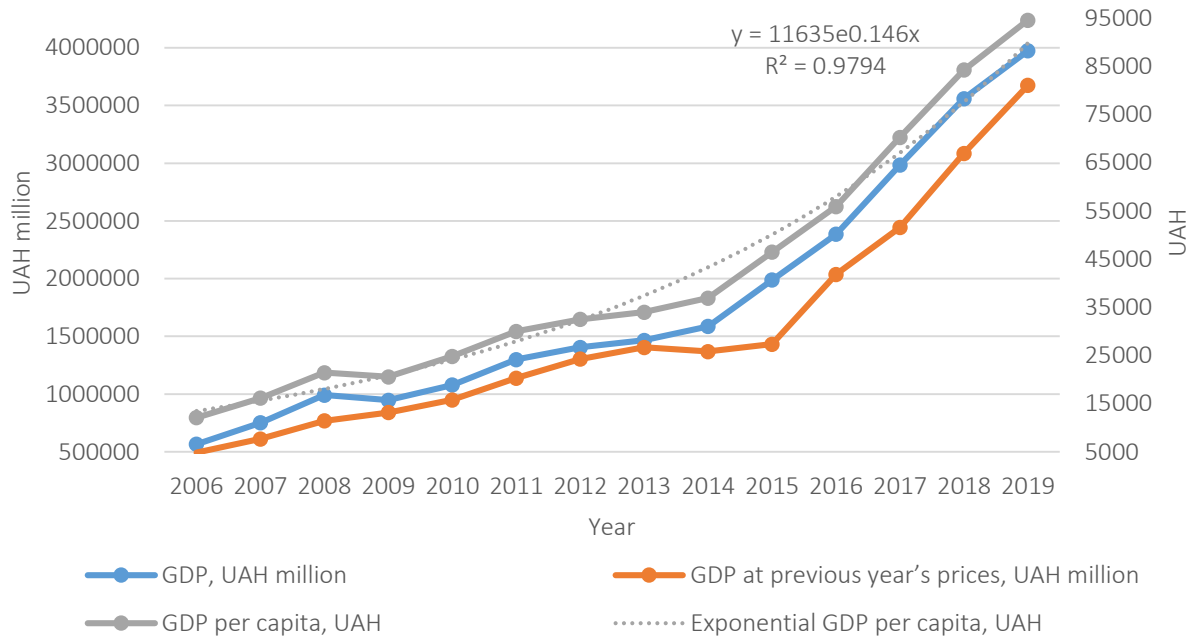

Figure 1. Trends in the development of Ukraine's economy in 2006–2019

factors on the development of the national economy, which occurred nonlinearly (Figure 1), under the influence of exogenous and endogenous shocks.

It is argued that the most informative and relevant indicators for assessing the reform measures of economic transformation are the values of international indices and ratings (Strilets, 2019). It is the values of international indices and ratings that will be used to make assessments. First, they are publicly available; second, these are the indicators targeted by external investors and creditors, and third, they have a long period of observation. Indicators were chosen to reflect various aspects of the effectiveness of reforms: legal, institutional, social, financial, and so on.

Thus, the article examines the relationship between indicators of international rankings (as indicators of the effectiveness of reforms and sustainable development programs) and GDP per capita (as an indicator of national economic development) (Table 2).

Table 2. The value of international indices as an indicator of assessing the implementation of reforms and programs of sustainable economic development of Ukraine in 2015–2019

Reforms by the vector of development	Symbol	Indicator for the reform effectiveness	2015	2016	2017	2018	2019
Deregulation and development of entrepreneurship	N1	Freedom of business	59.30	56.80	62.10	62.70	61.30
Small and medium business development program	N2	Doing Business Index	61.52	63.04	63.90	65.75	70.20
Tax reform	N3	Taxation (Doing Business Index component)	72.99	72.72	80.77	79.35	81.10
Reform of economic competition protection	N4	Index of Economic Freedom	46.90	46.80	48.10	51.90	54.90
Reform of corporate law	N5	Property rights (Index of Economic Freedom component)	20.00	25.00	41.40	41.00	42.00
Capital market reform	N6	Market capitalization (Global Innovation Index component)	7.00	5.00	6.70	9.80	7.90
Labor market reform	N7	Labor Freedom Index	48.20	47.90	48.80	52.80	48.30
Transport infrastructure reform	N8	Depreciation rate of fixed assets, %	51.70	51.70	50.60	47.60	62.90
Public customs reform and integration into the customs union of the European Union	N9	Logistics performance index: efficiency of the customs clearance process	2.69	2.69	2.30	2.49	2.49

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Table 2 (cont.). The value of international indices as an indicator of assessing the implementation of reforms and programs of sustainable economic development of Ukraine in 2015–2019

Reforms by the vector of development	Symbol	Indicator for the reform effectiveness	2015	2016	2017	2018	2019
Monetary policy reform	N10	Fiscal freedom	78.70	78.60	78.60	80.20	83.90
Ukrainian Export Development Program	N11	International trade (Energy Reform Business Index component)	65.15	64.26	72.96	77.62	80.10
Energy reform	N12	Energy intensity (World Energy Trilemma Index component)	102.4	104.9	98.90	98.20	97.20
Energy efficiency program	N13	Energy security (World Energy Trilemma Index component)	101.8	100.1	105.8	106.8	102.0
Investment attraction program investment freedom	N14	Investment freedom (Index of Economic Freedom component)	15.00	20.00	25.00	35.00	35.00
Public procurement reform	N15	Public expenditure, % to GDP	28.00	30.60	38.20	45.00	47.20
Civil service reform and optimization of the system of state bodies	N16	State efficiency (Global Innovation Index component)	23.80	28.50	28.90	30.70	35.40
GDP per capita	GDP	GDP per capita, USD	7552.4	7518.8	7518.8	8712.9	9283.4

Therefore, the data available on the formed set of indicators will allow using the proposed method to assess further progress in the implementation of the reforms in the future.

3. RESULTS AND DISCUSSION

According to the analysis results, the function of the dependence of the GDP per capita indicator on the effectiveness of reforms in the process of the Sustainable Development Strategy "Ukraine – 2020" implementation was developed. The dynamics of GDP per capita in Ukraine and the value of growth of this indicator are chosen as the effectiveness indicator. Indicators mentioned in Table 2 were selected to assess the effectiveness of reforms and sustainable development programs (Figure 2).

Evaluation of the effectiveness of reforms and programs for the sustainable development of

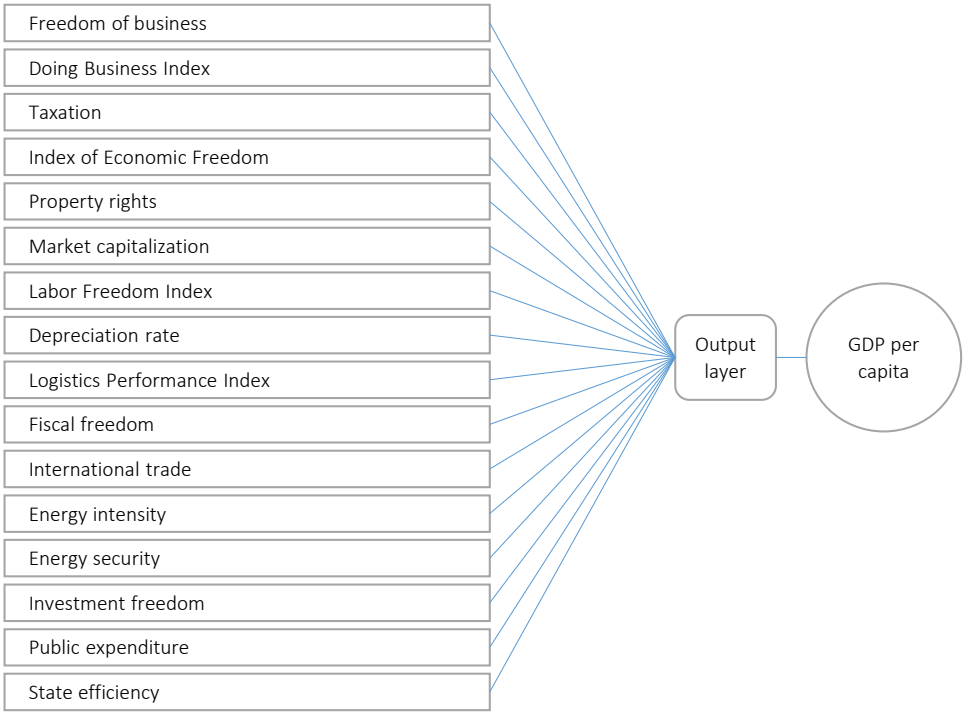

Figure 2. The structure of the model with a neural component with one source to determine the relationship between performance indicators of reforms and sustainable development programs and the volume of GDP per capita in Ukraine

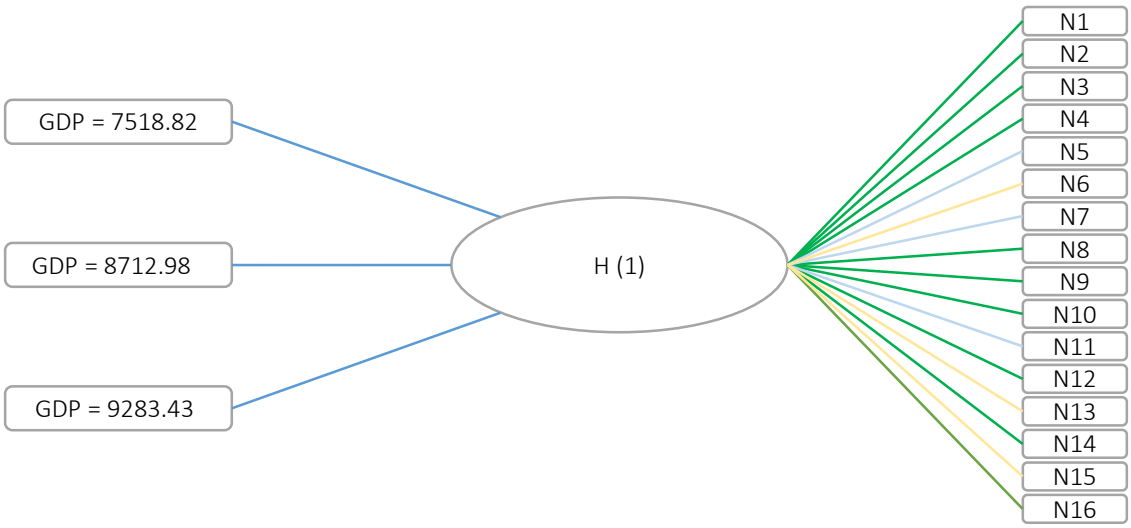

Figure 3. Graphs of the neural network of communication of indicators of reforms and programs of sustainable development effectiveness and the volume of GDP per capita of Ukraine for 2015–2019

Ukraine's economy through the development of a neural network was conducted using the analytical platform IBM SPSS Statistics (Figure 2). This software allows a single platform to carry out all classification stages, starting with data processing and following to modeling and visualization. It enables selecting groups of reforms and programs according to the importance of their relationships with the national economy's sustainable development.

Ten models with the smallest absolute error were selected as a result of self-learning by a neural network with inverse error propagation. The program tested the models and the result of their ranking by the magnitude of the error. It was found that one neuron is the optimal number. Therefore, a multilayer perceptron with one hidden layer was used in the study. Sigmond using the Resilient Propagation (Rprop) algorithm was used as a function of neuron $f(S)$ y activation. The model with one hidden layer, shown in Figure 3, turned out to be the best.

Graphic visualizing of the existing relationships enabled the determination of the uneven impact of various reforms and programs on Ukraine's economy sustainable development. In particular, such reforms as the reform of corporate law, the reform of labor relations, the program of development of Ukrainian exports, the reform of the civil service, and the optimization of the system of public bodies have a weak impact. At the same time, reforms and programs such as capital market reform, public procurement reform, and the energy efficiency program do not impact GDP per capita.

It should be noted that most of the reforms (Table 3) have a large impact on the development of Ukraine's economy. Their further implementation should be considered as a key lever in overcoming the existing obstacles to the sustainable development of Ukraine's economy.

The obtained gradation of the effectiveness of reforms in Ukraine creates a basis for maintaining the vector

Table 3. Gradation of the effectiveness of reforms and programs for sustainable development of the national economy of Ukraine for 2015–2019

Reform group	Symbol	Number in the group	Share, %	Characteristics of the impact on the national economy development
Group 1	N1, N2, N3, N4, N8, N9, N10, N12, N14	9	56.25	High
Group 2	N5, N7, N11, N16	4	25	Weak
Group 3	N6, N13, N15	3	18.75	Absent

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of development of effective reforms and restructuring of ineffective ones. According to research results, the pillars for the next stage of Ukrainian economy transformation may be considered:

Institutions and law:

- regulation of legislation in the system of corporate law;
- formation of an effective infrastructure of state management institutions;
- improving the rules and regulations of cash flow in the economy.

Sustainability:

- human capital development;
- adaptation of effective foreign experience in reducing energy consumption and the use of energy-saving technologies, renewable energy sources, and state guarantees of financial support for energy-saving programs.

Financial market:

- reforming the capital market to attract investment, creating a favorable business environment;
- public finance management/transparency:
- expansion of public-private partnership;
- development of transparent public procurement.

Developing an improved strategy for sustainable development based on these pillars will avoid existing mistakes in transforming the national economy.

CONCLUSION

The main question that arises as a result of the study is: to what extent the assessment of the above indicators can be combined with those that monitor the progress in the implementation of the Development Strategy "Ukraine – 2020". The debatability of the assessment lies in two planes: 1) application of the approach to assessment – the method of neural networks, 2) use of international ratings, indices, and their components instead of the indicators proposed in the Strategy. The suitability of performance indicators defined by the Sustainable Development Strategy "Ukraine – 2020" is quite ambiguously assessed by experts. Thus, the Ukrainian Evaluation Association's (2017) experts state that it is impossible to evaluate the achievement of the goal of the Strategy by the prescribed indicators (section 4 of the Strategy). Besides, strategic indicators for the implementation of the Sustainable Development Strategy "Ukraine – 2020" are not currently used by the authorities to assess the implementation of any reforms and programs. The Ukrainian authorities did not carry out any monitoring and evaluation of the Sustainable Development Strategy "Ukraine – 2020" in 2015–2016 and do not do so at present.

It can be argued that using a neural network architecture (perceptron with one hidden layer), and a database of indicators of international ratings, sufficiently representative results were obtained, which graded the effectiveness of reforms and sustainable economic development programs.

The results revealed distinctions in the assessment of the institutional influence by levels. On the one hand, there is a strong influence of higher-level institutions such as deregulation and development of entrepreneurship and the reform of economic competition protection. On the other hand, the reform of corporate law, the reform of labor relations, and the reform of the civil service and the optimization of the public bodies system have a weak impact on the development of the national economy. It highlights the area of attention because institutional aspects of reforms such as corporate law, labor relations, public procurement, and capital market reform create the basis of an efficient economy.

According to Williamson's (2000) classification, institutions belonging to the third level need to be improved – management institutions that regulate contractual relations. The changes in institutions of this level are faster than higher-level institutions and can be achieved during the study period.

The importance of reforms in this vector is confirmed by numerous empirical studies that confirm the relationship between the development of institutions and economic growth (Acemoglu, Johnson, & Robinson, 2005; Andrew, 2013; Bruinshoofd, 2016; Bassanini, Scarpetta, & Hemmings, 2001; Bartlett, Čučković, imir Jurlin, Nojkoviă, & Popovski, 2013; Efendic, Pugh, & Adnett, 2010; Cavalcanti & Novo, 2005; Vitola & Senfelde, 2015).

The obtained results are the basis for constructing a new strategy of sustainable development of the national economy for the forecast 2020–2030. The proposed indices of international rankings can be used as the key indicators for assessing the effectiveness of reform.

AUTHOR CONTRIBUTIONS

Conceptualization: Iryna Skliar, Nataliya Pedchenko, Yevhenii Kozmenko.
Data curation: Victoria Novikova.
Formal analysis: Victoria Strilec.
Investigation: Iryna Skliar, Victoria Strilec, Yevhenii Kozmenko.
Methodology: Nataliya Pedchenko, Victoria Strilec.
Software: Victoria Strilec, Yevhenii Kozmenko.
Validation: Nataliya Pedchenko, Victoria Novikova.
Visualization: Iryna Skliar, Victoria Novikova.
Writing – original draft: Nataliya Pedchenko, Victoria Strilec, Victoria Novikova, Yevhenii Kozmenko.
Writing – review & editing: Iryna Skliar, Yevhenii Kozmenko.

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