ASSESSMENT OF THE SUSTAINABLE ECONOMIC DEVELOPMENT GOAL 8: DECENT WORK AND ECONOMIC GROWTH IN G20 COUNTRIES

Indrė Lapinskaitė,¹ Silvija Vidžiūnaitė²

^{1,2}*Vilnius Gediminas Technical University, Faculty of Business Management,*

indre.lapinskaite@vgtu.lt, silvija.vidziunaite@stud.vgtu.lt

Abstract

Research purpose. The importance of sustainable development, the need to achieve sustainable economic development that does not harm the environment, conserve natural resources or exacerbate tensions in society has been increasingly discussed over the last decade. The purpose of the research is to evaluate the economic growth and decent work environment in G20 countries during 2013–2018 as G20 countries are the fastest growing countries in the world, and their economy describes the major part of the global economy.

Design/Methodology/Approach. Qualitative data analysis based on the comparative analysis of scientific literature, content analysis, interpretation, comparison and grouping is used, in order to analyse the theoretical aspects of sustainable development and its goals, especially goal 8: decent work and economic growth. TOPSIS method helps to rank G20 countries according to the indicators of SDG 8.

Findings. The results showed that Japan reached the best work environment and the most significant economic growth during 2013–2018. The United States is in second place and the third – the Republic of Korea. In the bottom three are Argentina, Brazil and South Africa.

Originality/Value/Practical implications. Since it is challenging to identify the achievements of the economic and work environment development, as an essential part of sustainable development goals, the results could lead to future insights that will create value to policymakers, economists and other stakeholders.

Keywords: Sustainable Development; Economic Development; Economy; G20; Sustainable Development Goals.

JEL codes: O10; O11; E0; Q56.

Introduction

The importance of sustainable development, the need to achieve sustainable economic development that does not harm the environment, conserve natural resources or exacerbate tensions in society has been increasingly discussed over the last decade. Sustainable development is legitimised as a fundamental long-term ideology of societal development and is understood to be a compromise between the environmental, economic and social goals of society, enabling public well-being for the present and future generations. Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs and without causing significant damage to natural resources. There are 17 sustainable development goals, and the eight-goal (SDG 8) is the most related to the economy as the primary purpose of this goal is to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Based on G20 (2020), The Group of Twenty (G20) is the premier forum for international economic cooperation and brings together 19 developed and developing countries and the European Union (EU). Collectively, the G20 economies represent around 80% of the world's economic output, three-quarters of world trade, two-thirds of the world population. It is essential to analyse how these countries develop because these are the fastest-growing countries in a world, and their economies together describe a significant part of the global economy.

The problem: it is difficult to identify the achievements of the economic and work environment development, as an essential part of sustainable development goals, in G20 countries during the last few years.

The object: the sustainable development goal 8: decent work and economic growth.

The aim of the research: to assess the achievements of sustainable development goal 8 in G20 countries.

Tasks: to analyse theoretical aspects of the economic development and sustainable development goal 8; to provide a methodology for the assessment of SDG 8 in G20 countries; based on the provided methodology, to evaluate the SDG 8 in G20 countries.

Methods: qualitative data analysis based on comparative analysis of scientific literature, content analysis, interpretation, comparison and grouping is used, in order to analyse the theoretical aspects of the economic development and sustainable development goal 8. The TOPSIS method helped to rank G20 countries according to the indicators of SDG 8.

Limitations: the period of 2013–2018, not the full scope of indicators, which could influence the results.

The theoretical framework of the economic development

Nowadays, economic development is a highly discussed subject. It has many definitions, and the authors describe the concept of economic development differently (Table 1).

The concept of economic development can be described through different subjects such as social, environmental, economic and technological. All the concepts of economic development have been analysed in a lot of scientific articles. Seidman (2005) described economic development as a process of creating and utilising some assets in order to improve economic well-being and quality of life. Greenwood and Holt (2014) presented economic development as an overall increase in the standard of living. Moreover, they separated economic development and economic growth because economic development is better described as the increase of standard living and economic growth measures such as income per capita do not correlate with the improvement in the quality of living (Greenwood & Holt, 2014). According to Bove and Elia (2017), security is another vital subject in economic development, ‘economics and security are heavily intertwined: economic motivations often exert an important role in affecting the decision to go to war, whereas conflict matters for the economy and can shape the paths to economic development’. Fodor and Glass (2018) analysed the indicators that reflect economic development. [The indicators] “include the level of economic growth and foreign investment as well as features of the labour market structure, for instance, the size of the public and service sectors and job/sectoral segregation, as well as the impact of state austerities, such as the generosity of leave policies and childcare availability”. Economic development is highly related to education. Schmid, Kolesnikov and Youtie (2017) explain that “education, research, and economic development are closely intertwined” and even ‘drafted an economic development plan that focused on developing the region’s higher education, research, and innovation capacity’.

Table 1. The definitions of economic development (Source: author’s compilation based on Engle (2009), Ghosh (2017), Greenwood & Holt (2014), Seidman (2005), Boianovsky (2017), Fagerberg & Srholec (2017))

Author	Definition
C. R. Engle (2009)	“Economic development occurs as economies diversify, provide a greater variety of goods and services, and as the purchasing power of consumers increases.”
Karl F. Seidman (2005)	Economic development is “a process of creating and utilising physical, human, financial, and social assets to generate improved and broadly shared economic well-being and quality of life for a community or region.”
Daphne T. Greenwood, Richard P. F. Holt (2014)	Economic development is a “broadly based and sustainable increase in the overall standard of living for individuals within a community.”

Ritwick Ghosh (2017)	The priorities of economic development are climate adaptation, poverty alleviation, disaster management and urban planning.
Jan Fagerberg, Martin Srholec (2017)	“Improving national technological and social capability is a must for achieving (sustainable) economic development and improving living conditions.”
Mauro Boianovsky (2017)	“The growth of developing economies was determined by their ability to implement technical progress.”

Moreover, economic development can be related to social and technological aspects. Fagerberg and Srholec (2017) claim that ‘improving national technological and social capability is a must for achieving (sustainable) economic development and improving living conditions’. One of the economic concepts of economic development is that ‘economic development occurs as economies diversify, provide a greater variety of goods and services, and as the purchasing power of consumers increases’ (Engle, 2009). As a result of the greater variety of goods and services and the purchasing power of consumers, the standard of living increases. Furthermore, because of that, the level of education and income increases, more significant employment opportunities occur, the level of emigration decreases (Engle, 2009). Endres and Harper (2019) argue that capital is the main element in analysing economic development. Another concept of economic development is presented by Boianovsky (2017); his thoughts are based on Harrod’s and Domar’s ideas of economic development, which says ‘that the growth of developing economies was determined by their ability to implement technical progress. Domar observed that the incremental capital-output ratio was more likely a passive result of the interaction between the propensity to save and technological progress, not a causal factor’. However, Wahl (2018) explains that political institutions can highly improve economic development, ‘inclusive political institutions can have positive development effects related to limited government, securing property rights, better checks and balances, improving fiscal capacity, providing public goods, and promoting trade and commerce’. Others argue that economic development is highly related to strategic international economic partnerships and multilateral credit because it improves infrastructure, employment and investments (X. Chen, 2018). There are also some environmental aspects of economic development. Aguilar and Song (2018) conducted a research, which showed that ‘at early stages of economic development[,] extractive forest practices may offer a sizable contribution to a country’s economy but at the expense of widespread deforestation and forest degradation’. Other authors argue that one of the essential elements of economic development is climate adaptation because it is ‘a form of economic development that incorporates climate threats at an early stage of economic strategising[sic] rather than merely in terms of risk management’ (Ghosh, 2017). There are a lot of different approaches to economic development, but it can be concluded that economic development is a process that improves economic, social, environmental and technological indicators or factors of a country.

The overview of sustainable economic development and the sustainable development goal 8

Sustainable development is another process related to economic development. Nowadays, sustainable economic development is a highly discussed topic, ‘during the last couple of years; sustainability has become topical in transnational public-private partnership (TPPP) projects primarily because of the enormous impact TPPP projects have on the environment, economic, and well-being of people’ (C. Chen, Yu, Osei-Kyei, Chan, & Xu, 2019). Economic development and sustainable development differ a little bit. Sustainable development aims at ensuring development that is conducive to the well-being of people today without diminishing the chances of future human well-being (Mitra, 2016). Moreover, ‘sustainability and sustainable development are foremost human concerns, largely due to the imbalance between evolving human needs and the availability of natural resources to support them’ (Borland, Bhatti, & Lindgreen, 2019). By other means ‘sustainable development requires that wealth, in a comprehensive sense, should not decrease over time’ (Rickels et al., 2016). One of the main subjects of development is innovation, in order to increase development, it is necessary to generate innovative ideas and improve sectors of economy, environment and sociology. ‘Whereas traditional innovation relates to the development of new products, materials, processes, services, and organisational forms to gain competitive advantage, sustainable innovation refers to the generation of new ideas, goods, services,

processes, or management systems that can deal with environmental problems’ (Ukko, Saunila, Rantala, & Havukainen, 2019). In summary, every country seeks to increase economic development by increasing the standard of living, and overall well-being of the country and sustainable development seeks to achieve the same goal but also without diminishing the well-being of a future human.

There are seventeen sustainable economic development goals: no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible production and consumption, climate action, life below water, life on land, peace, justice and strong institutions, partnerships for the goals (United Nations, 2015b). All of these goals are set for economic growth, social inclusion and environmental protection without diminishing the well-being of future generations.

The primary purpose of the goal ‘The sustainable development goal 8: decent work and economic growth’ is to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. There are a few targets in order to reach this goal. All targets can be divided into two parts: decent work (Table 2) and economic growth (Table 3).

Table 2. Targets and indicators for decent work (Source: author’s compilation based on the International Labour Organization, 2018)

Target	Indicator
Achieve higher levels of economic productivity	The annual growth rate of real GDP per employed person
Achieve full and productive employment and decent work for all by 2030	Average hourly earnings
	Unemployment rate
Substantially reduce the proportion of youth not in employment, education or training	The proportion of youth (15–24) not in education, employment or training
Take immediate and effective measures to eradicate forced labour, end modern slavery and eliminate child labour	Proportion and number of children aged 15–17 years engaged in child labour
Protect labour rights and promote a safe and secure working environment	Frequency rates of fatal and non-fatal occupational injuries
	Increase in national compliance of labour rights
Develop and operationalise a global strategy for youth employment	Total government spending on social protection and employment programmes

Targets that are related to decent work: to achieve higher levels of economic productivity, to promote development-oriented policies and encourage the formalisation and growth of enterprises, to achieve full and productive employment and decent work for all by 2030, to substantially reduce the proportion of youth not in employment, education or training, to take immediate and effective measures to eradicate forced labour, end modern slavery and eliminate child labour, to protect labour rights and promote the safe and secure working environment, develop and operationalise a global strategy for youth employment (United Nations, 2015a).

Table 3. Targets and indicators for economic growth (Source: author’s compilation based on the International Labour Organization, 2018)

Target	Indicator
Increase gross domestic product growth at least by 7 per cent in the least developed countries	The annual growth rate of real GDP per capita

Promote development-oriented policies and encourage the formalisation and growth of enterprises	The proportion of informal employment in non-agriculture employment
Improve progressively, through 2030, global resources efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation	Material footprint
	Domestic material consumption
Promote sustainable tourism	Tourism direct GDP
	Number of jobs in tourism industries
Strengthen the capacity of domestic financial institutions	Number of commercial bank branches and ATMs
	The proportion of adults with an account at a bank
Increase aid for Trade support for developing countries	Aid for trade commitments and disbursements

Targets that are related to economic growth are: to increase gross domestic product growth at least by 7 per cent in the least developed countries, to improve progressively, through 2030, global resources efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, to promote sustainable tourism, to strengthen the capacity of domestic financial institutions and to increase aid for trade support for developing countries (United Nations, 2015a).

The methodology of assessment of the sustainable economic development goal 8 achievements

In order to more precisely investigate the work environment and economic growth in G20 countries, the moving average method for forecasting is performed for missing data. The moving average forecasting aims at finding a missing data of annual growth rate of real GDP per capita, GDP per person employed, final consumption expenditure, unemployment rate, the proportion of youth (15–24 years) not in education, employment or training, number of commercial bank branches and account ownership at a financial institution or with a mobile-money-service provider from 2013 to 2018 of G20 countries.

Moving average method is one of the most popular methods used to predict future data in time series analysis (Hansun, 2013). The moving average method is similar to the mean method that assumes that the best predictor of what will happen tomorrow is the average of everything that has happened up until now, only it is adapted to the cyclical pattern. The predictions can be made according to this equation:

$$\hat{Y}_{t+1} = \frac{Y_t + Y_{t-1} + \dots + Y_{t-m+1}}{m}, \quad (1)$$

where

t – time;

m – a sum of periods.

After the forecasting of missing data, the TOPSIS method can be applied in order to assess the SDG 8 in G20 countries.

Yalcin, Kilic, & Guler (2020) explain that this is a method of prioritising variants, where the optimal alternative has the shortest distance from the ideal solution and the most significant distance from the ideal to the worst solution. This method is known as determining the rationality of variants in the proximity to the ideal point TOPSIS.

Suppose the values of each indicator are continually increasing or decreasing. Then the ideal best solution that consists of the best indicator values and the ideal worst solution that consists of the worst indicator values could be determined. The TOPSIS method solution algorithm consists of the following steps:

- construct the decision matrices (normalised, normalised weighted);
- identify the ideal best and the ideal worst alternatives;
- determine the distance between the comparative i and the ideal best and ideal worst;
- determine the relative distance of each i option to the ideal;
- determine the rationality index.

For the TOPSIS method, each indicator has a significance, but there are no limits to determining the significance of the indicators, and their sum need not necessarily be equal to one. The method is used for a large number of indicators. When calculating the shortest distance to the ideal positive solution, and the longest distance to the ideal negative solution by TOPSIS, the relative significance of those distances is underestimated.

The TOPSIS model is described in seven steps below:

Step 1: Construct the decision matrix (based on experts) and determine the weight of the criteria.

$$X = (x_{IJ}), \quad (2)$$

$$W = [w_1, w_2, \dots, w_n], \quad (3)$$

where

X – decision matrix;

W – weight vector, $x_{ij} \in \mathbb{R}$ and $w_1 + w_2 + \dots + w_n = 1$.

Criteria of the functions can be benefit functions (more is better) or cost functions (less is better).

Step 2. Calculate the normalised decision matrix. This step transforms various criteria dimensions into non-dimensional criteria, which allow comparisons across criteria. Because various criteria are usually measured in various units, the scores in the evaluation matrix have to be transformed to a normalised scale. The normalisation of values can be carried out by one of the several known standardised formulas. The normalised value n_{ij} is calculated as follows:

$$n_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}}, \quad (4)$$

Step 3. Calculate the weighted normalised decision matrix. The weighted normalised value v_{ij} is calculated as follows:

$$v_{ij} = w_j n_{ij} \text{ for } i = 1, \dots, m; j = 1, \dots, n, \quad (5)$$

where

w_j – the weight of the j-th criteria.

Step 4. Determine the positive ideal (V^+) and negative ideal (V^-) solutions. The ideal positive solution is the solution that maximises the benefit criteria and minimises the cost criteria, whereas the negative ideal solution maximises the cost criteria and minimises the benefit criteria.

$$V^+ = (v_1^+, v_2^+, \dots, v_n^+) = \left(\left(\max_i v_{ij} \mid j \in I \right), \left(\min_i v_{ij} \mid j \in J \right) \right), \quad (6)$$

$$V^- = (v_1^-, v_2^-, \dots, v_n^-) = \left(\left(\min_i v_{ij} \mid j \in I \right), \left(\max_i v_{ij} \mid j \in J \right) \right), \quad (7)$$

where

I is associated with benefit criteria and J with the cost criteria, $i = 1, \dots, m$; $j = 1, \dots, n$.

Step 5. Calculate the Euclidean distance from the ideal best (V+) solution and the anti-ideal best (V-) solution. The separation measures of each alternative from the ideal best (V+) solution and the anti-ideal (V-) solution, respectively, are as follows:

$$S_i^+ = \sqrt{\sum_{j=1}^n (v_{ij} - v_i^+)^2}, \quad i = 1, 2, \dots, m, \quad (8)$$

$$S_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_i^-)^2}, \quad i = 1, 2, \dots, m, \quad (9)$$

Step 6. Calculate the relative closeness to the positive ideal solution. The relative closeness is defined as follows:

$$P_i = \frac{S_i^-}{S_i^- + S_i^+}, \quad (10)$$

where

$$0 \leq P_i \leq 1, \quad i = 1, 2, \dots, m.$$

Step 7. Rank the preference order.

Based on the steps above, the TOPSIS method will be applied for calculations in the research.

The assessment of the sustainable economic development goal 8 achievements in G20 countries

Criteria selection is one of the critical steps in Multi-Criteria Decision Analysis. Criteria must encompass all aspects of sustainable economic development and be able to highlight differences between alternatives. Seven criteria of the annual growth rate of real GDP per capita, GDP per person employed, final consumption expenditure, unemployment rate, the proportion of youth (15–24 years) not in education, employment or training, number of commercial bank branches, and account ownership at a financial institution or with a mobile-money-service provider are used in the MCDA.

All statistical data must be available in order to make accurate calculations. Because of the lack of data, the forecast for some missing data is made by using the moving average method. Moreover, the weights of all indicators are the same (0.1428), thus, they should be considered equally. It means that all criteria are equally important while evaluating SDG 8 of G20 countries. All indicators are measured in different measures; data should be normalised in order to make accurate calculations. Euclidean normalisation method is used in order to normalise data. It should be taken into consideration that indicators as the annual growth rate of real GDP per capita, GDP per person employed, final consumption expenditure, number of commercial bank branches and account ownership at a financial institution or with a mobile-money-service provider must be maximised. It means that the higher the value indicator reach, the better it is. However, indicators as the unemployment rate and proportion of youth (15–24 years) not in education, employment or training must be minimised, it means that the lower the indicator is, the better. After the normalisation, the TOPSIS method can be used in order to assess SDG 8 in G20 countries. Firstly, the ideal positive and negative solutions are found. Secondly, the distance between the actual normalised value and ideal positive and negative solutions is calculated. The last step is to calculate the relative closeness to the positive ideal solution. Finally, the ranking can be made. All these steps are made with data from 2013 to 2018 separately.

In 2013, Turkey was in the first place, Japan was in the second place, and China was in the third place. The last three countries were Mexico, Italy and South Africa. In 2014, the United States was in the first

place, the United Kingdom was in the second place, and Korea was in the third place. The last three countries were Brazil, Argentina and South Africa. In 2015, the United States again was in the first place, Japan was in the second place and the United Kingdom in the third place. The last three countries were the Russian Federation, Brazil and South Africa. In 2016, India was in the first place, China was in the second place, and Japan was in the third place. The last three countries were Argentina, Brazil and South Africa. In 2017, Japan was in the first place, the United States was in the second place, and France was in the third place. The last three countries were Saudi Arabia, Brazil and South Africa. In 2018, the United States was in the first place, India was in the second place, and China was in the third place. The last three countries were Brazil, Argentina and South Africa. It can be seen that the three best and three worst countries repeat during the year.

Table 4. Assessment of SDG 8 of G20 countries (2013–2018) (Source: author’s compilation)

Country	Relative closeness	Ranking
Japan	0.644759	1
United States	0.643069	2
Korea, Rep.	0.613329	3
India	0.612212	4
China	0.609138	5
United Kingdom	0.605965	6
Australia	0.605807	7
Indonesia	0.599021	8
Germany	0.592811	9
France	0.588447	10
Turkey	0.582485	11
European Union	0.580931	12
Canada	0.567808	13
Russian Federation	0.554956	14
Italy	0.544895	15
Mexico	0.524549	16
Saudi Arabia	0.516044	17
Argentina	0.428712	18
Brazil	0.41011	19
South Africa	0.250499	20

The final results (Table 4) showed that Japan reached the best work environment and the most significant economic growth during 2013–2018. The United States is in second place and the third – the Republic of Korea. In the bottom three are Argentina, Brazil and South Africa.

Conclusions

Sustainable development aims at ensuring development that is conducive to the well-being of people today without diminishing the chances of future human well-being. There are seventeen sustainable economic development goals. The primary purpose of sustainable development goal 8 is to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work

for all.

In order to more precisely investigate the work environment and economic growth in G20 countries, the moving average method for forecasting is performed for the missing data. After the forecasting of missing data, the TOPSIS method can be applied in order to assess the SDG 8 in G20 countries.

The results showed that Japan reached the best work environment and the most significant economic growth during 2013–2018. The United States is in the second place and the third – the Republic of Korea. In the bottom three are Argentina, Brazil and South Africa.

Since it is challenging to identify the achievements of the economic and work environment development, as an essential part of sustainable development goals, the results could lead to future insights that will create value to policymakers, economists and other stakeholders.

Summarising the results ought to be emphasised that the results may have been affected by the research limitations. As the period of the research covers 2013–2018, the update for 2019 and 2020, and the evaluation of the recent drastic changes in the economy due to COVID-19 could lead to different results. Likewise, not the full scope of indicators, which could influence the results, was available. Some of the data were forecasted according to the data of previous years. The full scope of indicators could slightly change and influence the results. The research of other countries, which are not included in G20 and the comparison with the results of this research, would be very welcome.

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