

ARTIFICIAL INTELLIGENCE AS A DRIVER FOR INCLUSIVE ECONOMIC DEVELOPMENT UNDER THE CONDITIONS OF INTEGRATION INTERACTION OF NATIONAL ECONOMIES

R.Dzh. Sarvary, Master of Economics, MBA, postgraduate student,

I.V. Ziankova, Ph.D. in Economics, associate professor,

Euphrosyne Polotskaya State University of Polotsk, Belarus

Artificial intelligence (hereinafter - AI) and its use in the socio-economic development of the Republic of Belarus is planned at the macro-economic level for several decades, which is confirmed by the National Strategy for Sustainable Socio-economic Development of the Republic of Belarus until 2030 [1] and the Strategy " Science and Technology 2018-2040" [2]. In addition, the importance of AI as a driver of long-term development of many sectors of the economy is underlined by the establishment of the Interdepartmental Research Centre for Artificial Intelligence on the basis of the Joint Institute of Informatics Problems of the National Academy of Sciences of Belarus and the Institute of Physiology of the National Academy of Sciences of Belarus. The main goal of this association is to combine the skills and knowledge of specialists in the field of medical, biological, information, physical and mathematical sciences to create advanced and competitive AI technologies. This also includes creating conditions for the implementation of research projects in the field of artificial intelligence, both within the framework of state programmes of scientific research and involving non-governmental investments [3]. All this shows how important it is to investigate the topic of AI. In addition, it is worth taking into account the growing importance of creating an inclusive society, which the author believes can be supported by AI tools, as well as the use of machine learning to optimise the production processes of goods, works and services.

Keywords: *Artificial intelligence, inclusive economics, integration, EAEU partnership.*

The issue of introducing advanced digital technologies (employed together with AI) into production processes and social relations is highly topical today. At the same time, the global consequences of digitalisation and the spread of artificial intelligence remain highly controversial and difficult to predict. In the context of the formation of a single space for the movement of goods, services, capital and labour within the Eurasian Economic Union, the development of the digital economy is becoming a priority for integration and the possibilities of using AI for the benefit of both the integration partnership and each participants in the partnership particularly [4]. The objective of EAEU regional economic integration is to promote sustainable development. Both the countries of the Latin American and Caribbean basin and the integration associations of the region also refer to the priority of inclusive growth and development. One of the driving forces behind this approach is the recognition that accelerated economic growth does not necessarily lead to improved quality of life, reduced inequality or increased participation in economic activity. The Latin American and Caribbean region is known to be one of the most unequal regions in the world. Despite relatively low unemployment rates, workers may have little or no access to economic output. For these reasons, it is important to examine the inclusiveness of the economies of the Latin American and Caribbean regions and the EAEU. As shown below, both regions can benefit from learning together and sharing best practices.

According to studies by the Eurasian Economic Commission and UNCTAD, inclusive growth refers to economic growth that is accompanied by the creation of favourable conditions for the improvement of the quality of life and equal opportunities for all groups of the population. The assessment of the inclusiveness of economic growth is based on three key areas: economic development, quality of life and socio-economic inequality. Indicators of progress in each of these three areas have been selected to fully describe the multi-faceted phenomenon of inclusive growth, taking into account available statistical data. Thus, indicators of economic openness, unemployment and GDP and related indicators are used to assess economic development. A country's progress in all three areas is assessed using the Inclusive Growth Composite Index, which combines performance in each area and scores for each area using a principal component weighting methodology. The methodology allows the highest weight to be assigned to those indicators and components that contribute most to the variability of the baseline data and thus determine inclusiveness in general [5]. Indicators of the Composite Index of Inclusive Growth based on a developed approach by Eurasian Economic Commission and UNCTAD are presented below.

Table 1. — Indicators of the Composite Index of Inclusive Growth based on a developed approach by Eurasian Economic Commission and UNCTAD

Economic development	The quality of life	Socio-economic inequality
GDP per capita (PPP, constant 2011 constant USD)	Under-five mortality rate (mortality per 1,000 live births)	Youth-Adult Employment Parity (ILO evaluation)
National income per capita (adjusted net; USD at constant 2010 prices)	Access to a safe water source (% of population)	Employment parity between women and men (ILO evaluation)
Labor productivity (GDP, PPP USD at constant 2011 prices, per employed person)	High School Enrollment (%)	Labor force participation rate parity between women and men (ILO evaluation)
Electricity consumption (kWh/person)	Coverage of basic health services	Income concentration ratio (Gini index)
Employment rate (ratio to labor force; %; ILO evaluation)	Logistics Index: General (from 1=low to 5=high)	Proportion of the poor (living on less than 5.50 USD per day (in line with PPP); % of population)
Openness of the economy (export of goods and services, % of GDP)	Fixed broadband Internet coverage (subscriptions per 100 people)	Gender parity of enrollment in secondary school (general) education
	Access to a bank account or mobile money (percentage of adults (aged 15+))	Gender parity in the number of seats held by women and men in national parliaments
	CO2 emissions (kg per USD PPP GDP)	

Source: designed by the author based on [6].

According to studies and calculations (Eurasian Economic Commission and UNCTAD), the Republic of Belarus is in the middle of the ranking (Fig. 1).

According to Figure 1, Belarus is in an intermediate position between developing and advanced economies in terms of inclusive development. The main constraining factors include

secondary school enrolment rates, health care, access to financial services and employment parity between men and women. On many of the above issues, the author believes that AI can serve as a tool to improve the level of integration indicators. Here the author is not talking about Belarus' exceptional leadership in the above indicators. At least, the current challenge is to use the strong technological and scientific potential of the national economy to improve the country's position in terms of economic inclusion [5, p.101-105]. The following best practices of AI in education, medical sector etc. might be reused for advancing inclusiveness positions (table 2).

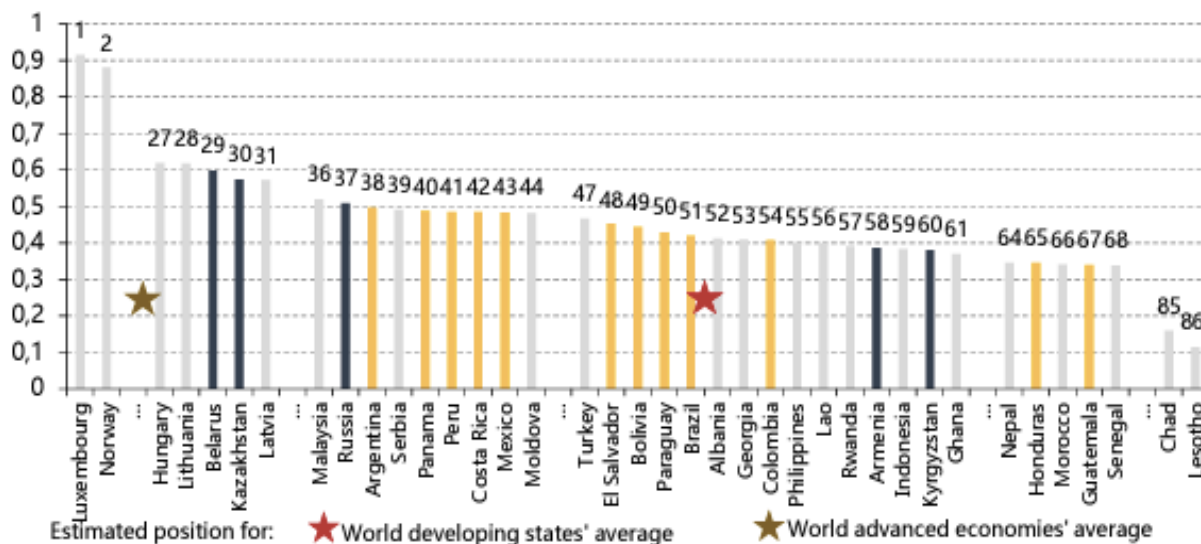


Figure 1. — Selected countries: Inclusive Growth Composite Index 2018 (ranking of 86 countries and index with a maximum value of 1) [5, p.99].

Table 2. — Implementation cases of applying AI in different sectors

Sector	Application cases, examples
1	2
Secondary education	<p>a) ML-used algorithms to define students skills and abilities in relation to school subjects. Value: helps to increase average performance through the right direction of study and the application of skills and abilities.</p> <p>b) Using ML to predict the learning outcomes of certain categories of students: by direction, by class, by performance. Value: contributes to a timely response to potential problems with certain categories of students, helps to apply the necessary measures to prevent the repetition of negative education scenarios.</p> <p>c) AI can help increase the retention rate of teachers or pupils in secondary schools. Using historical data, AI helps predict potential outcomes for certain categories of indicators and apply retention measures in a timely manner. Value: reducing employee churn rate and improving academic performance by retaining high-performing students - they help maintain a competitive advantage for ones to motivate others to learn.</p>
Medical sector	<p>a) Teams of clinicians, researchers or data managers involved in clinical trials can speed up the process of searching for and confirming medical coding, which is critical to the conduct and completion of clinical trials.</p> <p>b) Healthcare payers can personalise their health plans by connecting a virtual agent via conversational AI with members interested in customised health solutions.</p> <p>c) Clinicians can improve and modify care to patients by combing through medical data to predict or diagnose disease faster.</p>

The ending of table 2

1	2
Financial&banking sector	Credit&collection scoring, portfolio optimisation, fraud detection, IT operations optimisation, digital marketing boosting, risk assessment, customer experience personalisation, etc.
Labour market	a) First, artificial intelligence may directly substitute capital for labor in prediction tasks. b) AI with automated prediction can increase the relative returns to capital versus labor in complementary decision tasks. c) Increase in labor productivity on account of AI-automation. d) AI&ML reduces uncertainty as to enable new decision tasks that did not exist before

Source: designed and created by the author.

As it's presented in the above table, AI has a huge variety of implementation cases where each suffering parameter may win while inserting AI into the business process algorithms. A higher level of inclusiveness in this case is accessed when the dynamics of changes through the use of AI is monitored on a regular basis, which allows you to quickly respond to a positive result from the application and consolidate it in the long term. While when a negative effect is detected, monitoring the results helps to mitigate emerging risks at an early stage of implementation.

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ИНКЛЮЗИВНОЕ ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ В УСЛОВИЯХ ИНТЕГРАЦИОННОГО ВЗАИМОДЕЙСТВИЯ НАЦИОНАЛЬНЫХ ЭКОНОМИК

Искусственный интеллект (далее - ИИ) и его использование в социально-экономическом развитии Республики Беларусь планируется на макроэкономическом уровне в течение нескольких десятилетий, что подтверждается Национальной стратегией устойчивого социально-экономического развития Республики Беларусь. Беларусь до 2030 г. [1] и Стратегии «Наука и технологии на 2018-2040 гг.» [2]. Кроме того, важность ИИ как драйвера долгосрочного развития многих отраслей экономики подчеркивается созданием Межведомственного исследовательского центра искусственного интеллекта

на базе Объединенного института проблем информатики Национальной академии наук Беларуси и Института физиологии НАН Беларуси. Основная цель этого объединения — объединение навыков и знаний специалистов в области медицинских, биологических, информационных, физико-математических наук для создания передовых и конкурентоспособных технологий искусственного интеллекта. Сюда же относится создание условий для реализации научно-исследовательских проектов в области искусственного интеллекта как в рамках государственных программ научных исследований, так и с привлечением негосударственных инвестиций [3]. Все это показывает, насколько важно исследовать тему ИИ. Кроме того, стоит учитывать растущую важность создания инклюзивного общества, которое, по мнению автора, может поддерживаться инструментами ИИ, а также использование машинного обучения для оптимизации процессов производства товаров, работ и услуг.

Ключевые слова: *искусственный интеллект, инклюзивная экономика, интеграция, партнерство ЕАЭС.*