



FORMING THE TRANSFORMATIONAL LITERACY OF ECONOMIST SPECIALISTS BASED ON ARTIFICIAL INTELLIGENCE: AN ECONOMIC APPROACH

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ABSTRACT

This article analyzes the theoretical and practical aspects of forming the artificial intelligence (AI) literacy of economist specialists in the context of the digital economy based on a transformational economic approach. This approach involves qualitatively renewing human capital, adapting economic thinking to digital and algorithmic reasoning, and purposefully implementing AI tools in investment, financial, and management analyses. The article proposes the structural components of literacy, stages of development, and mechanisms for integrating education and practice.

Introduction. Digital transformation is becoming the most critical vector of today's global economy. The deep penetration of artificial intelligence (AI) technologies into production, finance, trade, logistics, employment, and investment sectors demands a fundamental reconsideration of traditional economic mechanisms. Now, the efficiency of the economy depends not on intuitive decisions of human factors but on algorithmic thinking based on the analysis, forecasting, and optimization of digital data. Therefore, the new era demands economists develop competencies to work with AI and Big Data — which has become a central factor for national competitiveness and innovative economic development.

Traditional economic competencies — such as macroeconomic analysis, microeconomic modeling, statistics, and financial management — remain important but have acquired new meaning integrated with AI technologies. This process is not merely technical modernization but a transformation of economic thinking. The transformational economic approach entails a fundamental renewal of the economist's decision-making mentality, economic thinking paradigm, and labor activity strategy, not just learning technological tools.

This article analyzes the theoretical foundations of the transformational economic approach and develops structural mechanisms and methodological solutions for integrating AI literacy formation into education and practice.

Transformational Economic Thinking: Theoretical Foundations and Methodological Principles

Transformational learning theory (J. Mezirow, K. Illeris) explains the process of revising existing knowledge systems and forming new cognitive structures through reflective changes. From the economic sciences perspective, this approach means a radical shift in economists' decision-making styles: moving from intuitive or empirical approaches to analytical and algorithmic decision-making systems.

In modern economics, the concept of “data-driven management” is increasingly central. In this model, the economist is not merely an analyst but a strategic designer collaborating with AI systems. Transformational economic thinking means making decisions based not only

on theoretical grounds but also on algorithmic forecasting, statistical regression, and neural modeling results.

By harmonizing rational choice theory, information asymmetry concepts, behavioral economics, and cognitive economics principles with AI models, economists can optimally develop decisions even under uncertainty. Thus, the transformational approach updates three critical layers of economic thinking: reflective analysis, algorithmic decision mechanisms, and data ethics.

Reflective analysis involves viewing economic problems from multiple perspectives and developing new economic interpretations based on available data.

Algorithmic decision mechanisms imply integrating AI and machine learning models with economic modeling.

Data ethics covers normative thinking aimed at addressing algorithmic bias, social consequences of automated analysis, and ensuring digital fairness.

Economic Content of Artificial Intelligence Literacy

Artificial Intelligence Literacy (AIL) for economists is not merely technical knowledge but a tool for scientific substantiation of economic analysis and strategic decision-making. This literacy includes the following integrative components: knowledge, practice, critical ethics, and integration.

Knowledge component includes understanding AI fundamentals applied to economic processes, machine learning (supervised/unsupervised), neural networks (ANN, CNN, LSTM), and data modeling methods. The compatibility of economic models with AI algorithms opens new analytical opportunities, e.g., combining regression models with deep learning architectures to produce deeper investment risk forecasts.

Practical component involves the economist's skills in using analytical tools (Python, R, Stata, Power BI, Tableau, Google Colab, Kaggle). Working with real economic data — financial reports, market prices, macro indicators — students learn economic forecasting and modeling practically.

Critical-ethical component includes assessing the socio-economic impacts of AI systems, such as algorithmic bias, data privacy, personal information protection, and economic equality in automated decisions.

Integration component demands applying AI solutions at enterprise, network, and macroeconomic levels, harmonizing machine results with human expertise (human-in-the-loop). This leads to a complex but consistent transformational economic analysis process.

Transformational Model and Mechanisms in the Educational Process

The transformational economic model is developed as a four-stage systematic process:

Motivational stage: Students are introduced to AI's role in the economy, digital transformation's impact on economic analysis, algorithmic trading, and market crises to strengthen willingness to change and readiness for reflective thinking.

Analytical preparation stage: Students study statistical analysis, regression models, time series, clustering, risk modeling, and use machine learning algorithms for economic forecasting, market segmentation, and demand-supply analysis.

Reflective-practical stage: Students work on real projects using AI, such as assessing investment efficiency, analyzing corporate risks, or building macroeconomic growth forecasts. They learn to interpret algorithm results economically and develop strategic decisions.

Transformational stage: Students independently develop AI-based economic projects, e.g., automating company operations, implementing digital analysis models, or preparing proposals to optimize state investment policies. At this stage, the student becomes not only an economist but also an innovative manager.

The model's key advantage is that the education process is enriched by continuous analysis, reflection, and evaluation. Assessment criteria include project outcomes, expert evaluations, real economic indicators (KPIs), and the level of innovative activity.

Integration of Education and Practice: Economic Mechanisms

Integrating economic education with practice in the digital economy context is a central mechanism for developing AI literacy:

Curricula at economics faculties need revision. New modules such as "AI and Economic Analysis," "Digital Economic Thinking," and "Algorithmic Trading Ethics" should foster transformational thinking.

Laboratories and data centers must be established. Providing students with access to Google Colab, Kaggle datasets, Power BI, or econometric modeling platforms teaches them to work with real data.

Interdisciplinary collaboration among informatics, statistics, economics, and management departments is necessary. Partnerships with enterprises, banks, and investment companies should be organized.

Pedagogical methods should update to include case studies, problem-based learning, simulations, hackathons, and project-based learning, helping students develop quick and logical decision-making skills in complex economic situations.

Continuous professional development courses for professors and practitioners are essential due to the rapid advancement of AI technologies, ensuring competitiveness.

Expected Outcomes and Economic Efficiency

As a result of the proposed transformational model, economist specialists will gain competencies in data-driven decision-making, early identification of investment risks, optimizing corporate efficiency, and macroeconomic forecasting. These outcomes will improve not only the quality of education but also the efficiency of economic practice. Graduates will actively participate in digital transformation in the real sector, banking system, and public administration. Their activities will contribute to the stability of the investment environment, reduction of economic risks, and growth of national innovative potential.

Conclusion. Forming the transformational literacy of economist specialists based on artificial intelligence is a strategic requirement of the digital economy and a foundation for national innovative development. This process requires not only technical training but also renewal of economic thinking, changes in decision-making culture, and the formation of socially responsible digital thinking.

Updating the education system, establishing practical laboratories, interdisciplinary cooperation, and an ethics-based algorithmic approach will turn economist professionals into active actors in the global digital economy. Therefore, artificial intelligence literacy is not merely a technological competency but a new intellectual capital for national economic stability.

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